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**United States Court of Appeals  
for the Federal Circuit**

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**2016-1706, -1707, -1710, -1712**

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ULTRATEC, INC.,  
*Appellant,*

v.

CAPTIONCALL, LLC,  
*Appellee,*

MICHELLE K. LEE, Director, U.S. Patent and  
Trademark Office, UNITED STATES,  
*Intervenors.*

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*Appeals from the United States Patent and Trademark Office, Patent  
Trial and Appeal Board in Nos. IPR2013-00540, IPR2013-00541,  
IPR2013-00544, and IPR2013-00545.*

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**BRIEF FOR APPELLANT**

Anthony A. Tomaselli  
[anthony.tomaselli@quarles.com](mailto:anthony.tomaselli@quarles.com)  
Kristin Graham Noel  
[kristin.noel@quarles.com](mailto:kristin.noel@quarles.com)  
Martha Jahn Snyder  
[martha.snyder@quarles.com](mailto:martha.snyder@quarles.com)  
QUARLES & BRADY LLP  
33 East Main St.  
Suite 900  
Madison, Wisconsin 53703  
Tel. (608) 251.5000  
Fax (608) 251.9166

Michael J. Curley  
[michael.curley@quarles.com](mailto:michael.curley@quarles.com)  
QUARLES & BRADY LLP  
One South Church Ave.  
Suite 1700  
Tucson, Arizona 85701  
Tel. (520) 770.8700  
Fax (520) 623.2418

*Counsel for Appellant Ultratec, Inc.*

SEPTEMBER 30, 2016

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**CERTIFICATE OF INTEREST**

Counsel for Appellant Ultratec, Inc. certifies the following:

**1. The full name of every party or amicus represented by me is:**

Ultratec, Inc.

**2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:**

Ultratec, Inc. and CapTel, Inc.

**3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:**

Ultratec, Inc. has no parent corporation, and no publicly held corporation owns 10% or more of its stock.

**4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or are expected to appear in this court are:**

Quarles & Brady LLP- Anthony A. Tomaselli, Kristin Graham Noel,

Michael A. Jaskolski, Matthew J. Duchemin, Martha Jahn Snyder, Stephen

J. Gardner, Michael J. Curley, Nikia L. Gray, Edward King Poor

Dated: September 30, 2016

Respectfully submitted,

/s/ Anthony A. Tomaselli  
Anthony A. Tomaselli  
[anthony.tomaselli@quarles.com](mailto:anthony.tomaselli@quarles.com)  
Kristin Graham Noel  
[kristin.noel@quarles.com](mailto:kristin.noel@quarles.com)  
Martha Jahn Snyder  
[martha.snyder@quarles.com](mailto:martha.snyder@quarles.com)  
QUARLES & BRADY LLP  
33 East Main St.  
Suite 900  
Madison, WI 53703  
Tel. (608) 251.5000  
Fax (608) 251.9166

Michael J. Curley  
[michael.curley@quarles.com](mailto:michael.curley@quarles.com)  
QUARLES & BRADY LLP  
One South Church Ave.  
Suite 1700  
Tucson, AZ 85701  
Tel. (520) 770.8700  
Fax (520) 623.2418

*Counsel for Appellant Ultratec, Inc.*

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## **I. STATEMENT OF RELATED CASES**

Pursuant to Federal Circuit Rule 47.5(a), Appellant Ultratec, Inc. (“Ultratec”) states as follows:

(a) There have been no previous appeals from any of the proceedings consolidated on appeal.

(b) The patents-at-issue in these consolidated appeals have been litigated to final verdict in *Ultratec, Inc. v Sorenson Commc’ns, Inc.*, No. 3:13-cv-00346 (W.D. Wis.). A jury found that Appellee CaptionCall, LLC (“CaptionCall”), and its parent company, Sorenson Communications, Inc. (“Sorenson”), infringed eight patents owned by Ultratec and licensed by CapTel, Inc., (“CapTel”) and awarded Ultratec and CapTel past damages of over \$44.1 million. *Id.*, Dkt. 688 (Nov. 3, 2014).<sup>1</sup> Four of these patents are the same as those at issue in these consolidated appeals. Five months later, the Patent Trial and Appeal Board (“PTAB”) issued final written decisions finding claims of all eight patents obvious or anticipated. The district court stayed the post-judgment proceedings pending final resolution of the PTAB proceedings. *Id.*, Dkt. 876 (May 13, 2015). The Court’s decisions in these consolidated appeals will directly affect the result of this district court case.

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<sup>1</sup> The Court may properly take judicial notice of matters of public record, such as filings before trial-level tribunals. *See, e.g., VirtualAgility Inc. v. Salesforce.com, Inc.*, 759 F.3d 1307, 1312 (Fed. Cir. 2014) (citing *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 497 n.1 (Fed. Cir. 1997).

(c) The parties are currently involved in two other district court cases in which Ultratec and CapTel have accused CaptionCall and Sorenson of infringing patents related to the patents-at-issue in these consolidated appeals. These proceedings are stayed at the request of the parties pending final resolution of parallel PTAB proceedings. *Ultratec, Inc. v Sorenson Commc'ns, Inc.*, No. 3:14-cv-00847, Dkt. 43 (W.D. Wis. Sept. 14, 2015); *Ultratec, Inc. v Sorenson Commc'ns, Inc.*, No. 3:15-cv-00563, Dkt. 27 (W.D. Wis. Dec. 22, 2015). The Court's decisions in these consolidated appeals may affect the result of these district court cases.

(d) The parties are currently involved in other PTAB proceedings in which CaptionCall has petitioned for review of patents owned by Ultratec but not directly at issue in these consolidated appeals. The proceedings are docketed as IPR2015-00636, IPR2015-00637, IPR2015-01355, IPR2015-01357, IPR2015-01358, IPR2015-01359, and IPR2015-01889. The Court's decisions in these consolidated appeals may affect the result of these PTAB proceedings.

(e) The three consolidated appeals 16-1708, 16-1709, and 16-1715 and the two consolidated appeals 16-1713 and 16-2366 between the same parties are pending before the Court and are considered companion cases with the above-captioned consolidated appeals.

## **II. JURISDICTIONAL STATEMENT**

These consolidated appeals arise from the following PTAB proceedings, each initiated on a petition by CaptionCall, in which the PTAB found certain claims of Ultratec's patents anticipated, obvious, or both:

- IPR2013-00540 (Claims 1 and 2 of U.S. Patent No. 6,233,314);
- IPR2013-00541 (Claims 1-15 of U.S. Patent No. 5,909,482);
- IPR2013-00544 (Claims 7-11 of U.S. Patent No. 8,213,578); and
- IPR2013-00545 (Claims 1 and 2 of U.S. Patent No. 6,594,346).

The PTAB asserted jurisdiction over CaptionCall's petitions under 35 U.S.C. § 6(b)(4). The PTAB issued final written decisions in all four proceedings on March 3, 2015. Ultratec timely requested rehearing, and the PTAB denied Ultratec's requests. Ultratec timely filed its notices of appeal on February 2, 2016.

The Court has jurisdiction over these appeals under 28 U.S.C. § 1295(a)(4)(A) and 35 U.S.C. § 329.

## **III. STATEMENT OF THE ISSUES**

Whether the PTAB erred in holding that:

- Claims 1 and 2 of the '314 Patent (IPR2013-00540) are invalid as anticipated by *Ryan*;<sup>2</sup>
- Claims 1 and 2 of the '314 Patent (IPR2013-00540) are invalid as obvious in view of *Wycherley* and *Yamamoto*;<sup>3</sup>

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<sup>2</sup> U.S. Patent No. 5,809,112 ("*Ryan*").

- Claims 1 and 5 of the ‘482 Patent (IPR2013-00541) are invalid as anticipated by *Ryan*;
- Claims 1-15 of the ‘482 Patent (IPR2013-00541) are invalid as obvious in view of *Wycherley* and *Yamamoto* in combination with various other prior art references;
- Claim 7 of the ‘578 Patent (IPR2013-00544) is invalid as anticipated by *Ryan* and is obvious in view of *Wycherley* and *Yamamoto*;
- Claims 8-11 of the ‘578 Patent (IPR2013-00544) are invalid as obvious in view of *Ryan* and *McLaughlin*;<sup>4</sup>
- Claims 1 and 2 of the ‘346 Patent (IPR2013-00545) are invalid as obvious in view of *Ryan* and *Alshawī*;<sup>5</sup>

And whether *inter partes* review procedures deprived Ultratec of its constitutional rights.

More specifically, whether the PTAB erred in accepting—and relying on—the testimony of CaptionCall’s expert, Benedict Occhiogrosso, given that he did not qualify as a person of ordinary skill in the proper field of the invention. Also whether the PTAB erred in conducting material evidentiary rulings off-the-record, including refusing to allow Ultratec to file a motion to offer Occhiogrosso’s contradictory testimony. Whether the PTAB erred in its consideration of Ultratec’s objective indicia of nonobviousness. Whether the PTAB erred in its construction of “trained to the voice of the call assistant,” including by changing its

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<sup>3</sup> U.S. Patent No. 5,163,081 (“*Wycherley*”); Seiichi Yamamoto and Masanobu Fujioka, *New Applications of Voice Recognition*, Proc. JASJ Conf. (March 1996) (“*Yamamoto*”).

<sup>4</sup> U.S. Patent No. 6,181,736 (“*McLaughlin*”).

<sup>5</sup> U.S. Patent No. 5,815,196 (“*Alshawī*”).

interpretation over the course of the proceedings. Whether the PTAB failed to fully explain its rationale in combining references and/or overlooked evidence opposing such combinations. Finally, whether the IPRs deprived Ultratec of its right to a trial by jury and due process.

#### **IV. STATEMENT OF THE CASE AND THE FACTS**

Ultratec revolutionized telecommunications for the deaf and hard-of-hearing by inventing and commercializing the first captioned telephone and captioned telephone service. (Appx2460-2462, Appx2517). A captioned telephone allows a user to use whatever residual hearing the caller may have to listen to the voice of the other caller, while also viewing text captions of the other caller's words. (Appx7440, 6:36-46, Appx11235, 9:3-13). Captioned telephone service ("CTS") is a type of telecommunications relay service that provides the text captions. (Appx83, 3:13-25, Appx3692, 3:13-25, Appx7439, 3:20-36, Appx11233, 3:20-50). Ultratec's CTS, called "CapTel," has been heralded by the deaf and hard-of-hearing community as "life-changing" and "a gift and blessing." (Appx2482, Appx2479). Ultratec owns numerous patents related to CTS; four are at issue here.

##### **IV.A. Background**

###### ***IV.A.1. The Hard-of-Hearing Community***

Hearing loss is a wide-spread problem in the United States. Many hard-of-hearing individuals still speak for themselves and value hearing the other party in a conversation speak, even if only to gauge the person's tone of voice. (Appx2474-

2476). This population typically has experience using the telephone in the traditional manner and has a strong preference for communicating in a manner as similar to that as possible. (Appx2455-2458, Appx2468, Appx2476-2477).

Prior to CapTel, hard-of-hearing individuals experienced debilitating challenges in communicating by phone. (Appx2452, Appx2456, Appx2496). Due to their struggles, hard-of-hearing individuals often avoided using the phone altogether. (Appx2456-2457). When they did use the phone, they experienced embarrassment when they were unable to hear (Appx2456) or faced hang-ups when the other caller became frustrated with requests to repeat (Appx2481). Hard-of-hearing individuals often became dependant on family members or coworkers to make phone calls for them. (Appx2456, Appx2460, Appx2476-2477). These challenges threaten their personal relationships, employment opportunities, and ability to manage personal needs, like medical care. (Appx2477).

In 1990, Congress passed the Americans with Disabilities Act (“ADA”). 47 U.S.C. § 225. The ADA requires telecommunications providers to offer telecommunications relay services<sup>6</sup> that allow hearing-impaired individuals to communicate in a way that is “functionally equivalent” to hearing individuals. *Id.*, § 225(a)-(c). The Federal Communications Commission (“FCC”) has established a

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<sup>6</sup> Both telecommunications relay service and traditional relay service are sometimes abbreviated as “TRS”. To avoid confusion, Ultratec does not abbreviate either term, but the Court may see “TRS” used to describe either in the record.

Telecommunications Relay Services Fund (“the Fund”) to distribute reimbursements for telecommunications relay services. 47 C.F.R. § 64.604(c)(5)(iii).

Prior to CapTel, hard-of-hearing individuals relied on traditional relay service to make calls. (Appx2456-2457, Appx2515-2517). A traditional relay uses a call assistant (“CA”) as an intermediary between an individual who can hear (the hearing user) and an individual who is deaf or hard-of-hearing (the assisted user). (Appx81, 1:52-65, Appx3691, 1:51-65, Appx7438, 1:61-2:17, Appx11232, 1:54-67, Appx2456, Appx2515-2516). The assisted user types on an assistive device called a teletypewriter (“TTY”) to the CA; the CA then reads the text out loud to the hearing user; the hearing user responds orally to the CA; and the CA then types the words to the assisted user. (Appx81, 1:65-2:9, Appx3691, 1:64-2:8, Appx7438, 2:6-18, Appx11232, 1:67-2:11, Appx2456-2457, Appx2515-2516). The CA interacts with both callers, controlling the speed of the conversation. (Appx2484).

Traditional relays were slow. A typical CA could type approximately 40-60 words per minute, far below the normal rate of speech of approximately 200 words per minute. (Appx2465, Appx2516). This was problematic because hearing users were unaccustomed to the wait associated with typing and could lose track of the conversation. (Appx2465-2466). This was also true for assisted users who were



accustomed to regular telephone calls before losing their hearing. (Appx2466, Appx2468). Traditional relays also lacked accuracy, with an average accuracy rate of just over 90%. (Appx2471-2472).

Because the assisted user only received text of the conversation, traditional relay did not allow hard-of-hearing individuals to use residual hearing to discern emotion and tone. (Appx2476, Appx2530-2532). Traditional relays also inserted an intermediary between the callers, which caused the conversation to stop and start at the control of the CA. (Appx2465-2466, Appx2531).

The cumbersome nature of traditional relays deterred use. Compared to a regular phone call, traditional relay was unacceptable. (*Id.*). With traditional relay, long-felt, but unmet needs persisted for faster captioning and more natural-feeling calls.

#### ***IV.A.2. Captioned Telephone Service***

Ultratec revolutionized telecommunications for the hard-of-hearing when it invented CTS. Ultratec's version of CTS, CapTel, vastly improved over traditional relay.

##### **IV.A.2.a. Revoicing**

CapTel provides faster and more accurate captioning by using revoicing. (Appx2521-2522, Appx2461, Appx2463-2464, Appx2423-2426, Appx83, 5:24-50, Appx3693, 5:25-50, Appx7439, 3:48-59, Appx7440, 6:10-16, Appx11234, 6:6-27).

In CapTel, a CA revoices the words of the hearing user into a computer with voice recognition software trained to the voice of the CA. (Appx2461, Appx2521-2522, Appx2424, Appx83, 5:24-50, Appx3693, 5:25-50, Appx11234, 6:6-27). Captions are then sent to the assisted user, who then reads them on the captioned telephone. (Appx2464, Appx7440, 6:36-46, Appx11235, 9:3-13). Revoicing is much faster than typing; a typical CA revoices approximately 150-250 words per minute. (Appx2465, Appx2424). The average CapTel call lasts under three minutes, while the average traditional relay call lasts over five. (Appx2455). Revoicing also is more accurate than typing; CapTel's accuracy rate exceeds 98%. (Appx2471-2472).

#### **IV.A.2.b. Voice and Revoiced Text**

CapTel also provides a more natural-feeling call than traditional relays. With CapTel, the assisted user receives both the voice of the hearing user and the captions of the hearing user's words. (Appx2529-2530, Appx2461-2462, Appx2427-2428, Appx7440, 6:36-46, Appx11235, 9:3-13). Receiving the voice along with rapid captions allows the assisted user to use her residual hearing to discern tone and emotion while supplementing her understanding with the captions. (Appx2461, Appx2476, Appx7440, 6:36-46, Appx11235, 9:3-13). In addition, with CapTel, the CA is unobtrusive and has no interaction with the

callers, thus contributing to the “transparency” of the call. (Appx2484-2485). The hearing user may not realize that a CA is involved. (Appx2485-2486).

#### ***IV.A.3. CapTel’s Reception***

Based on CapTel, the FCC approved CTS as a reimbursable telecommunication relay service because it met the ADA’s requirement for “functional equivalence.” (Appx2473). *In Re Telecommunications Relay Servs. & Speech-to-Speech Servs.*, 18 F.C.C. Rcd. 16121, 16121 (July 25, 2003).

Various industry players submitted comments to the FCC in support of CapTel. State TRS Administrators, individuals responsible for administering telecommunications relay service in their individual states (*e.g.*, Appx2512), praised the speed and accuracy of CapTel’s captions made possible by revoicing:

One of the basic components of the CapTel call is voice recognition software, which significantly increases the accuracy of transmitted text when compared to a traditional “typed” relay call. ... Trial participants report that corrections are rare and handled by the CapTel Operator in real-time. Ultratec reports an accuracy rate in excess of 98% compared to the nation’s best relay centers’ average accuracy rate of just over 90%.

(Appx2471-2472). State TRS Administrators also praised the naturalness of CapTel calls:

The transparency of the CapTel operator and the ability of both parties to “talk over” each other in an equivalent manner to a standard non-relay call, results in a more natural experience for the hearing party. Reports of hang-ups and frustrations over relay call “lag time” and “turn taking” are nominal.

(Appx2486).

Sprint, a provider that independently worked to develop a telecommunications solution for the hard-of-hearing described CapTel as a “technologically advanced and innovative offering.” (Appx2487). Hamilton Relay, a provider that has served the hard-of-hearing since 1991, commented that CapTel “‘feels’ more like using conventional voice telephone service, with ... delivery of the actual voice and the written version generated when the CA revoices the message, [making it] less intrusive and more ‘natural’ for the call participants.” (Appx2488).

CapTel users submitted comments to the FCC, praising CapTel’s speed, accuracy, and naturalness (Appx2469, Appx2477-2481):

The speed difference is significant between someone physically typing the information and someone speaking the information for instant captions. ... The CapTel service is faster and near seamless because of voice activated computer technology speed.

(Appx2469 (emphasis removed)).

CapTel is remarkable. It enabled me to carry on a more normal conversation, while hearing the person’s voice. Captions are almost instantaneous and so I could read the text to make sure I was understanding accurately.

(Appx2478).

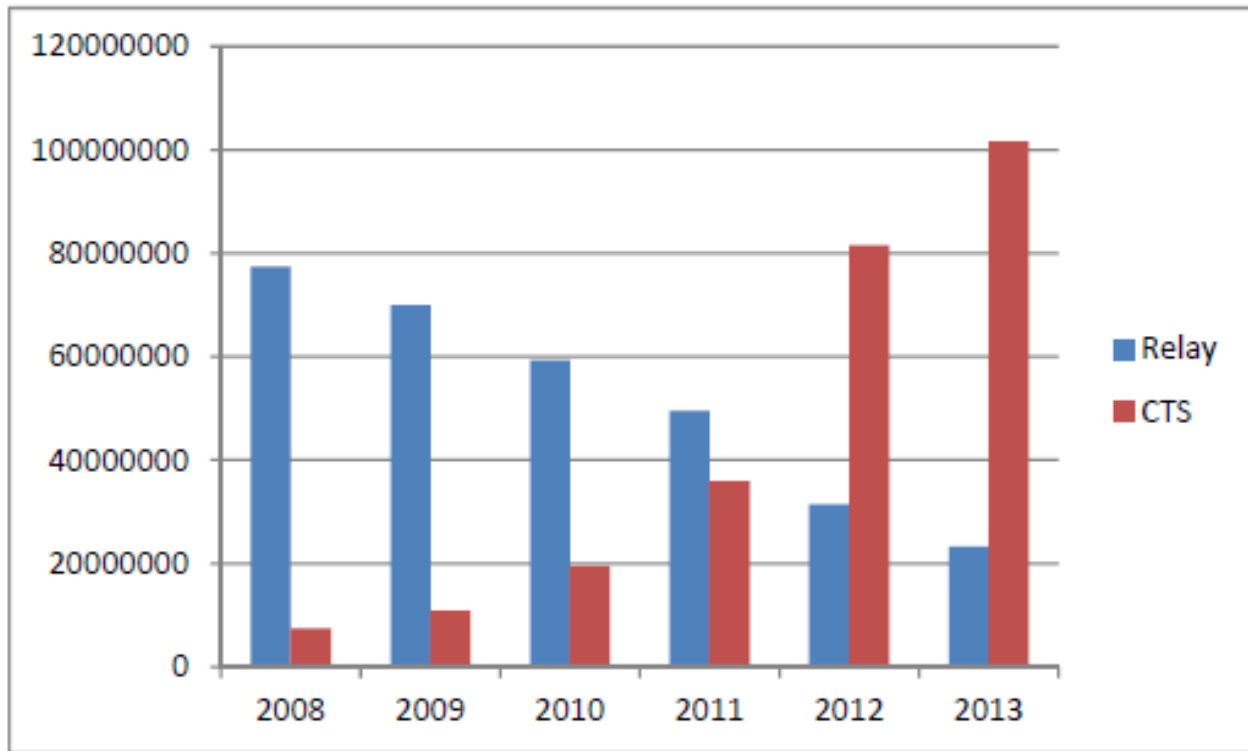
I have a cochlear implant and do not understand all voices well and the CapTel service helps me get those words and voices I didn’t understand. I can just pick up my CapTel phone and call anyone

without telling them we are speaking through a relay which relay services make others feel so uncomfortable.

(Appx2479-2480) (emphasis removed).

Ultratec won awards for developing the technologies associated with CapTel. In 2002, the National Association of State Chief Information Officers awarded Ultratec “Outstanding Achievement in the Field of Information Technology” for Ultratec’s development of revoicing technology. (Appx2470). It recognized that Ultratec’s technology made “[t]he transcription from voice to text much faster than is possible with typing, and nearly simultaneous with the spoken conversation.” (*Id.*).

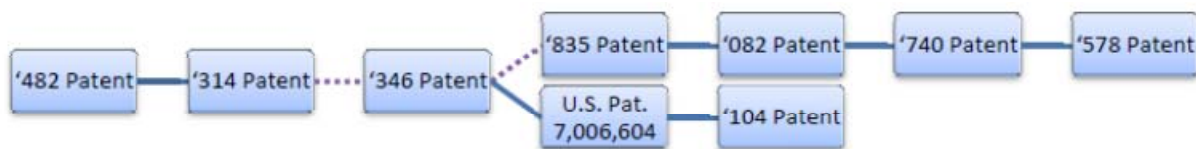
Since CapTel’s launch, the use of CTS has steadily climbed, in comparison to traditional relay service. (Appx2429-2436). This disparate use is tracked in minutes reimbursed by the Fund. (Appx2431). The Fund administrator publishes reports of minutes of use for various services, including CTS and traditional relay. (*Id.*). The reports show that use of CTS steadily increased from 2008 to 2013, while traditional relay service has declined:



(Appx2432-2433).

#### ***IV.A.4. Patents-At-Issue***

This appeal concerns four Ultratec patents that relate to telephone relays for the deaf or hard-of-hearing. All of the patents in these consolidated and companion appeals are in the same family. The diagram below demonstrates the relationships between the patents (solid lines indicate continuations and dashed lines represent continuations-in-part):



Four of these patents are at issue in these consolidated appeals. All four patents relate to facilitating telecommunications between an assisted user and a hearing user, as detailed more fully below.

***IV.A.5. CaptionCall and District Court Litigation***

Years after CapTel's launch, CaptionCall entered the market with captioned telephones and service that knocked-off CapTel and infringed Ultratec's patents. Accordingly, Ultratec and CapTel sued CaptionCall—and its parent company, Sorenson—in May 2013, asserting eight of Ultratec's patents, including the '482, '314, '346, and '587 Patents. *Ultratec, Inc. v Sorenson Commc'ns Inc.*, No. 3:13-cv-00346, Dkt. 1 (W.D. Wis. May 17, 2013).

After hearing the full story of Ultratec's innovations and having the opportunity to assess the credibility of the parties' witnesses, the jury found that CaptionCall infringed Ultratec's patents and that all of the asserted claims were not invalid. *Id.*, Dkt. 658 (Oct. 23, 2014). The jury awarded Ultratec \$44.1 million for past damages. *Id.*, Dkt. 682 (Oct. 24, 2014). Five months later, the court stayed post-trial proceedings, including Ultratec's request for an injunction, pending the outcome of these consolidated and companion appeals. *Id.*, Dkt. 876 (May 13, 2015).

#### ***IV.A.6. IPR Proceedings***

Months after CapTel filed suit, CaptionCall petitioned the PTAB for review of Claims 1-15 of the '482 Patent, Claims 1 and 2 of the '314 Patent, Claims 1 and 2 of the '346 Patent, and Claims 7-11 of the '578 Patent. (Appx85, Appx3696, Appx7443, Appx11237). The PTAB instituted review and ultimately based its determination of unpatentability primarily on the following three references.

##### ***IV.A.6.a. Ryan***

*Ryan* relates to a relay for sending messages between a standard phone and a telecommunications device for the deaf ("TDD") in which individual words in the messages are corrected before they are displayed at the TDD. (Appx683). *Ryan* contains the following passage, which is heavily relied upon by CaptionCall and the PTAB:

Although an operator or relay agent is typically responsible for manipulating terminal to relay messages between phone and TDD, it is contemplated by the present invention that the relay function may be automated so that the presence of a human operator would not be required. For example, speech recognition software could be employed at device to interpret a voice message from a caller at phone and convert the message from a voice format to a data format while providing an error correction feature for words that are not recognized by the software. This feature might be used when the speech recognition software attempts a phonetic spelling of the unrecognized word or if the software were to prompt the caller to spell an unrecognized word by speaking each letter of the word into their telephone set. If the software is specifically designed to recognize the voice of particular relay agents, the accuracy of the relay service may be improved by having one of these agents listen to the caller and



repeat the voice message into a terminal adapted to convert the agent's voice message into a data message.

(Appx687, 4:19-38 (emphasis added)). *Ryan* does not provide an explanation for the phrase "software is specifically designed to recognize the voice of particular relay agents." Ultratec's expert, however, testified that this phrase describes software that is ***designed*** (*i.e.*, hardcoded) to recognize particular voices or groups of voices, not software that is ***trainable*** (*i.e.*, adaptable) to any particular person's voice. (Appx3019-3020, Appx6690, Appx10592-10539, Appx13222-13223).

#### **IV.A.6.b. *McLaughlin***

*McLaughlin* is directed to a network communications system that used existing modems designed to allow for data communication over telephone lines, and purportedly could be used for a traditional text-only relay service, or for either a voice-carry-over or hearing-carry-over service. (See Appx08148, 31:41-62). However, *McLaughlin* is not directed to a system, let alone a device, for a hard-of-hearing user, who can both hear and speak, that provides both voice of the hearing user and captions of the words spoken by the hearing user. (Appx10597-10599).

#### **IV.A.6.c. *Wycherley***

*Wycherley* relates to a dual party relay service between a hearing user and an assisted user that employs text-to-speech processing and, on a limited basis, automatic speech recognition in order to reduce or eliminate the need for a CA.

(Appx659). *Wycherley* discloses that the relay applies speech recognition directly to the hearing user, not the CA. (Appx664, 4:35-36). The CA only intervenes when there are excessive translation errors. (Appx665, 5:21-31). At that point, the CA intervenes by **typing** the words of the hearing person. (Appx665, 5:43-47).

#### **IV.A.6.d. *Yamamoto***

*Yamamoto* discloses “an operator assistance system, where there is voice recognition of an operator repeating the question from the user to reduce the time for accessing a database, targeting an increase in efficiency in the operations.” (Appx699). Ultratec’s expert testified that this discloses a system using speech recognition software for database information retrieval tasks, not a system using speech recognition for continuous dictation. (Appx3028-3029).

#### **IV.A.6.e. Testifying Experts**

CaptionCall submitted a declaration from Benedict Occhiogrosso. (Appx823, Appx4479, Appx8376, Appx12161). Prior to the PTAB proceedings, Occhiogrosso had no experience with telecommunications for the deaf or hard-of-hearing. (Appx2605-2608, Appx2615-2616).<sup>7</sup> Occhiogrosso admitted he did not analyze any secondary considerations in making his original obviousness determinations. (Appx2641, Appx2679-2683). Despite these inadequacies, Mr.

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<sup>7</sup> CaptionCall submitted identical transcripts of Occhiogrosso’s May 8, 2014 deposition in all of the proceedings; Ultratec cites to the transcript from IPR2013-00540.

Occhiogrosso opined that it would have been obvious to a POSA to combine various references related to telecommunications for the deaf and hard-of-hearing.

Ultratec filed patent owner responses, arguing that CaptionCall failed to establish unpatentability by a preponderance of the evidence and requesting to exclude Occhiogrosso's testimony. (Appx154, Appx3808, Appx7545, Appx11338). In support of each response, Ultratec submitted declarations from three experts with experience related to telecommunications for the deaf or hard-of-hearing: Paul Ludwick, Brenda Battat, and Constance Phelps.

Ludwick worked 18 years at Sprint, where he designed, implemented and managed the systems and functionality that supported the "Sprint Relay Service for the Deaf." (Appx2414-2417, Appx2447-2448). Ludwick testified that the challenged claims were novel and not obvious in view of the prior art, in part, because: *Ryan* did not disclose "voice recognition computer software trained to the voice of the call assistant ...."; *Wycherley* did not teach "the digital computer ... programmed to use a voice recognition computer software package trained to the voice of the call assistant ...."; it was not obvious to combine *Wycherley* and *Yamamoto* because *Wycherley* teaches away from the CA speaking into voice recognition software; and it was not obvious to combine *Ryan* and *McLaughlin* because *McLaughlin* does not teach voice recognition software at the relay. (Appx3018-3036, Appx6689-6707, Appx10591-10607, Appx13222-13226).

In addition, Ludwick submitted declarations regarding secondary considerations explaining which claims require the inventive features of revoicing, and voice and revoiced text and providing claim charts showing how CapTel embodies the challenged claims. (Appx2423-2429, Appx2437-2444, Appx13251-13252, Appx13270-13273).<sup>8</sup> Ludwick testified that CapTel enjoyed commercial success in comparison to, and at the expense of, traditional relay service. (Appx2429-2436, Appx13261-13268).

Battat was the Executive Director of the Hearing Loss Association of America (“HLAA”). (Appx2450, Appx2503-2505).<sup>9</sup> Battat spent over 24 years interacting with thousands of hard-of-hearing individuals about their telecommunication needs and preferences. (Appx2450-2455). Battat testified that the inventive features of revoicing, and voice and revoiced text, met long-felt, but unmet, needs in the hard-of-hearing community and received praise for doing so. (Appx2463-2489).

Phelps was the Executive Director of the Montana Telecommunications Access Program, and Chair of the National Association for State Relay

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<sup>8</sup> Ultratec submitted similar declarations from Ludwick regarding secondary considerations in IPR2013-00540, IPR2013-00541, and IPR2013-00544; Ultratec cites to the one from IPR2013-00542, in addition to the one from IPR2013-00545.

<sup>9</sup> Ultratec submitted similar declarations from Battat regarding secondary considerations in each of the underlying proceedings; Ultratec cites to the one from IPR2013-00540.

Administration. (Appx2512-2515, Appx2549).<sup>10</sup> Phelps corroborated Battat's testimony regarding long-felt, but unmet, need and praise. (Appx2520-2541).

Ultratec attempted to submit contradictory testimony made by Occhiogrosso during the jury trial, but the PTAB denied Ultratec's request for authorization to seek leave to submit the testimony in an off-the-record telephone conference. (Appx14350-14352, Appx14335). The contradictory testimony by Occhiogrosso related to admissions about prior art references at issue in these IPRs and went directly to his credibility. (Appx14350-14352, Appx14335).

On March 3, 2015, the PTAB issued final written decisions finding all challenged claims unpatentable and denying Ultratec's request to exclude Occhiogrosso's testimony. The PTAB found Claims 1 and 2 of the '314 Patent, Claims 1 and 5 of the '482 Patent, and Claim 7 of the '578 Patent anticipated by *Ryan* and obvious over *Wycherley* and *Yamamoto*. (Appx57, Appx3666-3667, Appx7406). The PTAB also found Claims 2-4 and 6-15 of the '482 Patent obvious over *Wycherley* and *Yamamoto* in combination with other prior art references (Appx3666-3667) and Claims 8-11 of the '578 Patent obvious over *Ryan* and *McLaughlin* (Appx7406). Finally, the PTAB found Claims 1 and 2 of the '346 Patent obvious over *Ryan* and *Alshawi*. (Appx11210).

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<sup>10</sup> Ultratec submitted similar declarations from Phelps regarding secondary considerations in each of the underlying proceedings; Ultratec cites to the one from IPR2013-00540.

## V. SUMMARY OF THE ARGUMENT

The PTAB's determinations of unpatentability should be reversed because they resulted from faulty application of the law and facts. The PTAB erred in accepting and relying on the testimony of CaptionCall's expert, Occhiogrosso, given that he did not qualify as a person of ordinary skill in the proper field of the invention. The PTAB erred in conducting material evidentiary rulings off-the-record, including refusing to allow Ultratec to file a motion to offer contradictory testimony of Occhiogrosso that is relevant to the PTAB's findings in these consolidated appeals. The PTAB erred in allowing hindsight to color its consideration of Ultratec's objective indicia of nonobviousness.

The PTAB erred in construing "trained to the voice of the call assistant," including by changing its interpretation over the course of the proceedings. The PTAB compounded its claim construction error by failing to consider one of the terms and misapplying the construction to the art. The PTAB erred in failing to perform a thorough motivation to combine analysis. Each of these errors alone provide grounds for overturning one or more of the PTAB's unpatentability determinations. Combined, these errors provide sufficient basis to overturn *all* of those determinations.

Finally, the IPRs deprived Ultratec of its right to a trial by jury and due process.

## **VI. ARGUMENT**

### **VI.A. Standards of Review**

Under this Court's current jurisprudence, this Court reviews the PTAB's legal conclusions *de novo* and its factual findings for substantial evidence.<sup>11</sup> *Nike, Inc. v. Adidas AG*, 812 F.3d 1326, 1332 (Fed. Cir. 2016). "Substantial evidence is more than a mere scintilla. It means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Id.* (quoting *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 217 (1938)).

Obviousness is a legal conclusion, which the Court reviews *de novo*, with underlying factual findings. *PPC Broadband, Inc. v. Corning Optical Commc'ns RF, LLC*, 815 F.3d 734, 740 (Fed. Cir. 2016). The Court reviews the PTAB's ultimate claim construction *de novo*. *Id.*

### **VI.B. The PTAB Erred in Admitting and Relying on Occhiogrosso**

The PTAB abused its discretion in denying Ultratec's Motion to Exclude Occhiogrosso's testimony and refusing, off-the-record, to allow Ultratec to file a motion to offer contradictory testimony from Occhiogrosso. As a result, the PTAB's findings of invalidity are unsupported by substantial evidence and should be overturned.

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<sup>11</sup> As explained further in Section VI.C.1, this Court should decline to apply the substantial evidence standard to the PTAB's factual findings. *Merck & Cie v. Gnosis S.P.A.*, 808 F.3d 829, 839-42 (Fed. Cir. 2015) (Newman, J., dissenting). Rather, this Court should "determine whether the PTAB ruling is correct in law and supported by a preponderance of the evidence." *Id.* at 841.

Occhiogrosso has no experience with telecommunications technology for the deaf and hard-of-hearing, the relevant field of art, and thus is not a POSA. His testimony was therefore inadmissible under Federal Rule of Evidence 702. In denying Ultratec's Motion, the PTAB erred in determining the relevant field of art and misapplied *Sundance, Inc. v. DeMonte Fabricating Ltd.*, which holds that "it is an abuse of discretion to permit a witness to testify as an expert on the issue[] of ... invalidity unless that witness is qualified as an expert in the pertinent art." 550 F.3d 1356, 1363 (Fed. Cir. 2008). The PTAB compounded its error by issuing an off-the-record ruling prohibiting Ultratec from offering Occhiogrosso's contradictory testimony. This error was particularly egregious in light of the PTAB's weighing of the credibility of the parties' respective experts and repeatedly finding Occhiogrosso more credible than Ludwick. Accordingly, the PTAB's abused its discretion and its findings on invalidity are not supported by substantial evidence.

***VI.B.1. The PTAB Incorrectly Determined the Field of Art and, Thus, Erred in Finding Occhiogrosso was a POSA***

The PTAB incorrectly defined the field of art as telecommunications technologies generally and, as a result, held that a POSA did not need any experience with telecommunications technology specific to the deaf and hard-of-hearing. (Appx17-18, Appx3610-3611, Appx7368-7369, Appx11187).



**VI.B.1.a. The proper field of art is telecommunications technology for the deaf and hard-of-hearing.**

The relevant field of art is a threshold question in defining the hypothetical POSA. *See Sundance*, 550 F.3d at 1364. In determining the relevant art, the starting point is the claims. *Orthopedic Equip. Co. Inc. v. U.S.*, 702 F.2d 1005, 1008 (Fed. Cir. 1983). Other factors include the type of skill required to understand the disclosure of the patents, the prior art, and the nature of the problems giving rise to the invention. *Id.* at 1008-09; *Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1376 (Fed. Cir. 2012).

The claims at issue are directed specifically to a method to facilitate communication between a hearing user and a deaf or hard-of-hearing user. (*See generally* Appx78-84, Appx3688-3695, Appx7428-7442, Appx11228-11236). For example:

- Claim 1 of the ‘482 Patent recites “A method of operating a relay system using a call assistant to facilitate communication between a deaf person and a hearing person by telephone...” (Appx3694).
- Claims 7, 10, and 13 of the ‘482 Patent recite “A relay to facilitate communication between a deaf person using a telecommunication device for the deaf and a hearing person through a telephone system ...” (Appx3694-3695).
- Claim 1 of the ‘578 Patent recites “A system for providing captioning service to an assisted user...” (Appx7442).
- Claim 7 of the ‘578 Patent recites “A method of operating a captioned telephone service...” (Appx7442).

- Claim 1 of the '346 Patent recites "A method of operating a relay system using a call assistant to facilitate communication between a hearing person and an assisted user by telephone..." (Appx11236).
- Claim 2 of the '346 Patent recites "A relay to facilitate communication between an [sic.] hearing user, speaking words in voice, and an assisted user..." (Appx11236).
- Claim 1 of the '314 Patent recites "A relay to facilitate communication between a deaf person using a telecommunication device for the deaf and a hearing person...." (Appx84).
- Claim 2 of the '314 Patent recites "A relay to facilitate communication between a digital telecommunication device and a hearing person..." (Appx84).

The disclosures emphasize that the invention is a means *for the deaf and hard-of-hearing* to communicate over the telephone network.

- The Abstract of the '314 and '482 Patents: "A relay is described to facilitate communications through the telephone system between deaf people and hearing people." (Appx78, Appx3688).
- The Abstract of the '346 Patent: "A relay is described to facilitate communication through the telephone system between hearing users and users who need or desire assistance in understanding voice communications." (Appx11228).
- The Abstract of the '578 Patent: "A method and system for operating a captioned telephone service ... comprising the steps of providing words spoken by a remote user to a relay, at the relay, a call assistant listening to the words spoken by the remote user ... and presenting the text stream to an assisted user via a display." (Appx7428).
- Each of the patents-at-issue specifies that the field of the invention "relates to systems to assist telephone communications *by those persons who are deaf, hard of hearing or otherwise have impaired hearing capability.*" (Appx81, 1:13-17, Appx3691, 1:13-17, Appx7438, 1:25-29, Appx11232, 1:15-20 (emphasis added)).

- The Summary of the Invention in each patent states that “[t]he present invention is summarized in that a relay system to facilitate the translation of information and communication *between deaf and hearing persons* ....” (Appx81, 2:40-45, Appx3691, 2:40-45, Appx7438, 2:39-43, Appx11232, 2:45-48 (emphasis added)).

Thus, the patents-at-issue identify that a POSA would need to understand telecommunication technology for hearing-impaired individuals.

Even *CaptionCall* asserted that the patents-at-issue relate to technology for the hearing-impaired: “The ‘314 Patent relates to *telephone ‘relays’ for the hearing impaired.*” (Appx89 (emphasis added); *see also* Appx3701 (same for the ‘482 Patent), Appx7448 (same for the ‘578 Patent), Appx11242 (same for the ‘346 Patent)).

Finally, the nature of the problem confronting the inventors was the inadequacy of then-existing technology to meet the telecommunication needs of deaf and hard-of-hearing individuals. The ‘482, ‘314, and ‘346 Patents describe the following limitations of prior art telecommunication systems:

A limitation of the effectiveness of current relay protocols is the necessity for the call assistant simply to type what is said.... This limitation on the speed of conversion from speech to digital communications hampers the effective flow of communication in a relay call between the hearing person and a deaf person, since most hearing people speak at a rate which is higher than most call assistants can type. In addition, since conventional Baudot communications is unidirectional, the flow of conversation in a relay assisted communication session can be somewhat awkward.... This process enables a degree of two-way communication between a deaf person and a hearing person, but the system tries the patience of the hearing

person, since it is typically not conducted at a pace anywhere close to normal human communications.

(Appx3691, 2:9-38, Appx81, 2:9-38, Appx11232, 2:12-42). The ‘578 Patent goes further to describe that the inventors were attempting to develop a telecommunication system that was specifically adapted for individuals who were not deaf, but had diminished hearing. (Appx7439, 3:20-31, *see also* Appx7439, 3:53-59).

The PTAB’s assertion that Ultratec defined the relevant field of art in its Patent Owner’s Responses as merely “telecommunication technologies” is incorrect. (*See* Appx18, Appx3611, Appx7368, Appx11187-11188). Patent Owner repeatedly asserted that the field of art is telecommunication technology for the deaf and hard-of-hearing. (Appx264-266, Appx3928-3930, Appx7667-7669, Appx11454-11456; *see also* Appx161, Appx3815, Appx11344).

By looking at the patents-at-issue, the prior art, and the nature of the problems giving rise to the inventions, the relevant field of art should not be “telecommunications” generally, but instead telecommunications for the deaf and hard-of-hearing.

**VI.B.1.b. Occhiogrosso lacks the requisite experience to qualify as a POSA**

A POSA is a hypothetical person who is presumed to know the relevant prior art, which encompasses art in the field of the invention (here

telecommunications for the deaf and hard-of-hearing), and art that is reasonably pertinent to the problem faced by the inventor. *Custom Accessories, Inc. v. Jeffrey Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986). Regardless of what other skills or education a POSA in this case may have, he or she must be experienced in telecommunications technology for the deaf and hard-of-hearing. This alone is enough to establish that Occhiogrosso's testimony was improperly admitted because Occhiogrosso has no experience with telecommunication technology for the deaf and hard-of-hearing. (Appx2605-2608, Appx2615-2616)<sup>12</sup>; *Sundance*, 550 F.3d at 1363 (“[t]estimony proffered by a witness lacking the relevant technical expertise fails the standard of admissibility under Fed. R. Evid. 702”).

Occhiogrosso's *curriculum vitae* shows that he is an information technology generalist, with no experience in telecommunication technology for the deaf and hard-of-hearing. (Appx858-868, *see also* Appx267-270, Appx3931-3934, Appx7670-7673, Appx11457-11460). Occhiogrosso testified that, prior to the dispute between the parties, he never worked on telecommunication systems for the deaf or hard-of-hearing, never designed a relay system for hearing impaired users, never analyzed such a system, never used a TDD, and never visited a relay center that provides services to the deaf or hard-of-hearing. (Appx2605-2608,

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<sup>12</sup> Ultratec relied upon Occhiogrosso's same deposition testimony in Ultratec's Motions to Exclude. (Appx267-270, Appx3931-3934, Appx7670-7673, Appx11457-11460).

Appx2615-2616). He testified that he has no hands-on experience with telecommunication relay services; and indeed, did not even have any direct knowledge of specific service offerings or companies in the relevant industry until 2010-2011, which is over a decade after the 1997 priority date for the patents-at-issue. (Appx2608-Appx2611).

In light of Occhiogrosso's lack of relevant experience and expertise, the PTAB erred in holding that Occhiogrosso qualified as a POSA. As such, it was an abuse of discretion for the PTAB to deny Ultratec's Motion to Exclude his testimony.

***VI.B.2. The PTAB Improperly Allowed Occhiogrosso to Offer Testimony on Validity Despite His Lack of the Requisite Qualifications.***

The PTAB erred in allowing Occhiogrosso to testify as an expert on validity. Rule 702 governs the qualifications necessary to testify as an expert in an IPR proceeding. Fed. R. Evid. 702; *see also* 37 C.F.R. § 42.62. Under Rule 702, a witness is not qualified to testify on matters calling for consideration of evidence from the perspective of a POSA, such as invalidity, unless that witness possesses at least ordinary skill in the art. *Sundance*, 550 F.3d at 1364. An unqualified witness cannot testify regarding underlying technical questions, such as “the scope and content of prior art, the differences between the claimed invention and the prior art,

or the motivation of one of ordinary skill in the art to combine these references to achieve the claimed invention.” *Id.*

The PTAB improperly held that *Sundance*’s requirement that a witness be “qualified in the pertinent art” does not require an expert to be at least a POSA and, in fact, a lower threshold applies:

Patent Owner’s arguments are unpersuasive at the outset because, to testify as an expert under FRE 702, a person need not be a person of ordinary skill in the art, but rather simply “qualified in the pertinent art.” *Sundance*, 550 F.3d at 1363-64.

(Appx17, Appx3610, Appx7368, Appx11187 (other citations omitted)).

The PTAB’s distinction between “qualified in the pertinent art,” as that phrase is used in *Sundance*, and the qualifications of a POSA is not supported. Under *Sundance*, “qualified in the pertinent art” refers to the fact that, while an expert must have at least ordinary skill to testify on invalidity, other qualifications may also be necessary depending on the particular facts of the case:

We do not, of course, suggest that being a person of ordinary skill in the art automatically entitles a witness to testify as an expert on these or other matters. On the other hand, our opinion should not be read as suggesting that Rule 702 requires a witness to possess something more than ordinary skill in the art to testify as an expert.

*Sundance*, 550 F.3d at 1363. Regardless how a POSA is defined, that definition marks the minimum qualifications necessary for an expert to testify on invalidity. *See also Precision Fabrics Group, Inc. v. Tientex Int’l*, Nos. 1:13cv645, 1:14cv650, 2015 WL 224942, at \*3 (M.D.N.C. Jan. 15, 2015).

The PTAB misinterpreted *SEB S.A. v. Montgomery Ward & Co., Inc.*, 594 F.3d 1360 (Fed. Cir. 2010) and *Mytee Prods., Inc. v. Harris Research, Inc.*, 439 F. App'x 882 (Fed. Cir. 2011) in rationalizing that a witness need not possess the qualifications of a POSA to testify on invalidity. In *SEB*, the offered testimony did not relate to any issue that requires interpretation from the perspective of a POSA. See *Morpho Detection, Inc. v. Smiths Detection, Inc.*, No. 2:11cv498, 2012 WL 6004085, at \*1 (E.D. Va. Nov. 30, 2012) (explaining that *SEB* is distinguishable from *Sundance*). That expert opined solely on whether the structure of the accused product met the function-way-result test. See generally Expert Report of Charles E. Van Horn, *SEB S.A. v. Montgomery Ward & Co., Inc.*, No. 99 Civ. 9284, 2005 WL 6436151 (S.D.N.Y. Dec. 13, 2005). In *Mytee*, this Court did not reach the issue of whether the court misinterpreted *Sundance*, finding that the skill the expert lacked was not a skill a POSA was defined to need. *Mytee Prods.*, 439 F. App'x at 887. Accordingly, the PTAB misapplied *Sundance* and the denial of Ultratec's Motion to Exclude Occhiogrosso's testimony was an abuse of discretion.

***VI.B.3. The PTAB's Practice of Handling Evidentiary Matters Off-the-Record is Improper and Deprives this Court of Full Appellate Review***

Having improperly permitted Occhiogrosso to testify on invalidity, the PTAB compounded the prejudice by prohibiting Ultratec from submitting evidence to undermine the credibility of Occhiogrosso's opinions and analysis, including



that Occhiogrosso contradicted his PTAB testimony while testifying in front of a jury in the parallel district court proceeding. Highlighting the lack of due process afforded by the PTAB, the PTAB's off-the-record refusal to allow Ultratec to even file a *motion* to submit the evidence insulates Occhiogrosso's testimony, and Ultratec's explanations of its relevance, from appellate review.

**VI.B.3.a. Un-promulgated PTAB procedures permit significant evidentiary determinations to be made off-the-record**

Under the PTAB's rules, parties seeking to supplement the record must request authorization to file a motion for leave to supplement the record. 37 C.F.R. § 42.20(b). PTAB rules do not specify how authorization is to be requested or granted. The PTO's Trial Practice Guide likewise specifies no procedure for requesting authorization. *See* 77 Fed. Reg. 48762-63.

In practice, this "leave for leave" process unfolds as follows: First, the party seeking leave e-mails the PTAB, explaining the nature of the would-be motion and requesting that the PTAB convene a conference call to discuss the request. This e-mail does not become part of the PTAB record. Next, the PTAB responds, either denying authorization without further discussion or scheduling the conference call. Regardless, the PTAB's response does not become part of the PTAB record.

If a conference call follows, the PTAB may either grant or deny leave to file the motion on that call. In practice, the PTAB does not transcribe the call or make

it part of the record.<sup>13</sup> In some proceedings, as here, the PTAB does not even make a docket entry memorializing the call or decision. If the PTAB denies leave in an untranscribed call with no docket entry, none of the proffered evidence, the arguments regarding same, nor even the fact that a request was made and denied, becomes part of the record. (*See generally* Appx14350-14352 (discussing what happened in this instance), 14361-14362, 14332-14334).

**VI.B.3.b. The PTAB’s practice violates 37 C.F.R. § 1.2 and substantially prejudiced Ultratec**

Congress established the PTAB within the PTO. 35 U.S.C. § 6(a). Thus, in conducting IPRs, the PTAB must transact “[a]ll business ... in writing,” 37 C.F.R. § 1.2, and any and all actions of the PTAB must “be based exclusively on the written record ....” *Id.* In handling potentially dispositive evidentiary determinations off-the-record, the PTAB violates this rule. Here, where the PTAB—entirely off-the-record—rejected supplemental evidence relevant to Ultratec’s case, Ultratec was substantially prejudiced, warranting reversal. *PAM S.p.A. v. U.S.*, 463 F.3d 1345, 1348-49 (Fed. Cir. 2006) (agency’s failure to comply with its own regulation cannot be excused by agency discretion where substantial prejudice is shown).

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<sup>13</sup> While there is no rule or practice guidance specifically allowing for parties to hire their own court reporters for these conference calls, and then obtaining permission from the PTAB to file the transcript on the docket, Ultratec learned through its own requests on subsequent calls that the PTAB will entertain such requests.

On October, 30, 2014, Ultratec e-mailed the PTAB requesting authorization to submit a Motion for Leave to file Supplemental Evidence in the proceedings-at-issue and three other IPRs. (Appx14350, Appx14335). Ultratec explained that the proffered testimony, given a week earlier, was inconsistent with Occhiogrosso's testimony in the IPR proceedings to such an extent that it had to be submitted under the duty of candor. (*Id.*). Ultratec further provided the example that Occhiogrosso had testified *in agreement with* several of Ultratec's arguments regarding *McLaughlin*, including on points for which the PTAB ultimately relied on Occhiogrosso's testimony, such as whether the systems disclosed in the separate sections of *McLaughlin* are different embodiments. (Appx14350-14352). The PTAB held a conference call on November 4 and summarily denied Ultratec's request without a written order or any other record of its ruling. (*Id.*).

Ultratec's e-mail, the PTAB's remarks on the November 4 conference call, the reasoning for its evidentiary ruling, and the Occhiogrosso Trial Testimony itself all were shielded from review by this Court. In addition, the PTAB largely denied Ultratec's more recent request to correct the record to reflect these items. (Appx14332-14336). Instead, the PTAB deemed just two papers from IPR2013-00550 sufficient for purposes of appellate review: Paper 58 (Appx14337-14355) (Ultratec's request for rehearing, partially recapping the episode), and Paper 59 (Appx14356-14365) (the PTAB's order denying the request for rehearing,

defending proceeding off-the-record but not otherwise addressing the Occhiogrosso Trial Testimony). (Appx14332).

Even on this sparse record, the prejudice to Ultratec is apparent: the PTAB permitted a self-serving sworn declaration from CaptionCall's expert to stand while denying Ultratec the ability to undermine that expert's credibility with his own contradictory testimony. That prejudice became even more apparent when the PTAB issued its final written decisions, materially relying on the very declaration that would have been discredited by the Occhiogrosso Trial Testimony. *See* Sec. VI.B.4.

The prejudice to Ultratec is compounded by the PTAB's attempts to prevent robust appellate review. After ruling against Ultratec off-the-record, the PTAB also refused to complete the record beyond the limited extent noted above. Such self-insulation from appellate scrutiny is objectionable over and above its prejudicial effects upon Ultratec. It undermines this Court's ability to supervise the PTAB's actions and permits the PTAB excessive leeway in disposing of valuable intellectual property rights. "The court's review function is undermined when an agency assembles a record that consists solely of materials that insulate portions of its decision from scrutiny or that it deems relevant to specific allegations raised by a protester." *Joint Venture of Comint Sys. Corp. v. United States*, 100 Fed. Cl. 159, 168-69 (2011).

***VI.B.4. The PTAB Materially Relied on Occhiogrosso's Testimony***

Because the PTAB premised its invalidity analysis on Occhiogrosso's inadmissible testimony, the PTAB's decisions must be vacated.

For example, in the final written decisions concerning the '314, '482, and '346 Patents, the PTAB "credit[ed] Mr. Occhiogrosso's explanation" regarding *Ryan's* alleged disclosure of the claimed "speaker" and "digital computer connected to a microphone":

We credit Mr. Occhiogrosso's explanation that a speaker necessarily must be present in Ryan's relay system for a relay agent to "listen to the caller," as Ryan expressly discloses. Also, we credit Mr. Occhiogrosso's testimony that the recited "a digital computer connected to a microphone" necessarily must be present in Ryan's relay system for it to process the voice of the relay operator, and a digital computer necessarily must be present for Ryan's relay system to use speech recognition software.

(Appx27-28 (citations omitted), *see also* Appx3621, Appx11195). The disclosure of a prior art reference is determined solely from the perspective of a POSA, and thus the PTAB's reliance on Occhiogrosso's testimony was in error. *See Sundance*, 550 F.3d at 1363.

The PTAB also credited Occhiogrosso's testimony in holding the claims obvious, another inquiry determined from the perspective of a POSA. Specifically, the PTAB credited Occhiogrosso's testimony in finding that there was a motivation to combine the teachings of *Yamamoto* and *Wycherley* (Appx45-46, Appx3643-3644, Appx7392-7393) and that the claimed invention as a whole would have been

obvious to a POSA at the time of the invention (Appx49-50 (“Thus, we credit the testimony of Petitioner’s declarant, Mr. Occhiogrosso, that that these features would have been known in September 1997 to one of ordinary skill in the art in view of the teachings of Wycherley and Yamamoto”), Appx3644 (same), *see also* Appx7393). The PTAB further credited Occhiogrosso’s testimony in holding that modifying *Wycherley* in the manner proposed by CaptionCall would not render *Wycherley* unfit for its intended purpose. (Appx53 (“We disagree [with Patent Owner’s argument] because we credit Mr. Occhiogrosso’s testimony...”), Appx3648 (same), Appx7395 (same)).

For the ‘482 Patent, the PTAB further credited Occhiogrosso’s testimony in finding that it would have been obvious to combine the teachings of *Yamamoto* and *Wycherley* with *Vasile*, *Jones*, *Choi*, and *Liebermann*. (Appx3655 (“We are persuaded by Mr. Occhiogrosso’s testimony that noise cancellation was a well-known technique”), Appx3658 (crediting Occhiogrosso’s opinion for why it would be obvious to combine *Choi*), Appx3660 (“Weighing Mr. Occhiogrosso’s testimony against Mr. Ludwick’s testimony, we credit Mr. Occhiogrosso’s, which provides a reason for combining [*Vasile*]”), Appx3664 (“We find credible Mr. Occhiogrosso’s articulated reasoning [for combining *Liebermann*] that has some rational underpinning”).

With regards to the ‘346 Patent, the PTAB further credited Occhiogrosso’s explanation for why it would have been obvious to combine *Ryan* with *Alshaw* over Ultratec’s expert’s, Ludwick’s, testimony:

We credit Mr. Occhiogrosso’s explanation that improved accuracy would result by providing both voice and text. The general principle of Mr. Occhiogrosso’s testimony is additional channels of communication improve communication. This undercuts Mr. Ludwick’s position that video call “users could simply sign, rather than speak, [in a] video relay service making transcription of voice unnecessary.”

(Appx11205 (citations omitted)). (See also Appx11206 (“We disagree because we credit the testimony of Mr. Occhiogrosso that the principle of operation of the portion of *Ryan* used in the combination is having a relay agent repeat a hearing user’s words to provide text to an assisted user and that principle of operation is unchanged in the combination.”)).

Finally, with regards to the ‘578 Patent, the PTAB credited Occhiogrosso’s testimony over Ludwick’s in finding *McLaughlin* teaches the claimed captioned telephone device. (Appx7403 (“On this point, based on our review of *McLaughlin*, we credit the testimony of Petitioner’s declarant, Mr. Occhiogrosso, over that of Patent Owner’s declarant, Mr. Ludwick.”)). The PTAB, further relied on Occhiogrosso’s testimony in finding a motivation to combine *Ryan* and *McLaughlin*. (Appx7405).

If the PTAB properly excluded Occhiogrosso's testimony, there would be no basis for many of its conclusions regarding the teaching of the prior art and motivation to combine the references supporting its ultimate conclusion on obviousness. The refusal to admit and consider Occhiogrosso's testimony from the parallel district court trial compounded this error, and the cumulative impact resulted in a finding of unpatentability that cannot stand.

**VI.C. The PTAB Failed to Properly Consider Evidence of Secondary Considerations**

The PTAB engaged in impermissible hindsight by finding obviousness without properly considering Ultratec's evidence of secondary considerations. "Objective indicia 'can be the most probative evidence of nonobviousness in the record, and enables the court to avert the trap of hindsight.'" *Leo Pharm. Prods., Ltd. v. Rea*, 726 F.3d 1346, 1358 (Fed. Cir. 2013) (citation omitted). Here, the PTAB fell victim to hindsight by ignoring and discounting Ultratec's evidence of long-felt need, praise, and commercial success.

***VI.C.1. Substantial Evidence is the Wrong Standard of Review***

This Court should not apply the "substantial evidence" standard of review to the PTAB's factual findings regarding secondary considerations. In IPRs, the petitioner bears the burden of proving invalidity by a preponderance of the evidence. 35 U.S.C. § 316(e).



“The substantial evidence standard determines whether the decision could reasonably have been made, not whether it was correctly made.” *Merck & Cie*, 808 F.3d at 840. Thus, under the current regime, the PTAB may make a factual finding supported by substantial evidence, but not a preponderance of the evidence, and still be affirmed. *See id.* at 844-45. In such cases, the PTAB erred, but escapes reversal.

This Court should “determine whether the PTAB ruling is correct in law and supported by a preponderance of the evidence.” *Id.* at 841. Should the Court decline to apply this standard, however, Ultratec can still show how the PTAB’s factual findings are not supported by substantial evidence.

***VI.C.2. The PTAB Committed Error When Analyzing Evidence of Secondary Considerations***

The PTAB committed error when analyzing secondary considerations. First, the PTAB improperly discounted the uncontroverted evidence that CapTel embodies the challenged claims and thus failed to presume that CapTel’s commercial success was due to the claimed inventions. Second, the PTAB improperly based its obviousness determinations on expert opinion that did not consider secondary considerations at all. Finally, the PTAB improperly shifted the burden of persuasion by treating Ultratec’s evidence of secondary considerations as rebuttal evidence.

**VI.C.2.a. Ultratec was entitled to a presumption that the commercial success of its CapTel service was due to the claimed inventions**

The PTAB improperly discounted the uncontroverted evidence that CapTel embodies the challenged claims and thus failed to presume that CapTel's commercial success was due to the claimed inventions. This Court recently found the PTAB erred for similar reasons in *PPC Broadband*, 815 F.3d at 746-747.

In *PPC Broadband*, the patent owner alleged that its connectors were commercial embodiments of the patented invention and presented testimony supporting the allegation. *Id.* The PTAB found that the patent owner had not presented persuasive evidence of commercial success and that the patent owner had not established that its connectors met the claim elements, even though the petitioner did not argue to the contrary. *Id.* at 746. This Court disagreed:

When the patentee has presented undisputed evidence that its product is the invention disclosed in the challenged claims, it is error for the Board to find to the contrary without further explanation. ... The Board in its opinions did not explain why the SignalTight connectors fail to embody the claimed features, or what claimed features in particular are missing from the SignalTight connectors. ... Substantial evidence does not support the Board's finding on this point.

Because the evidence shows that the SignalTight connectors are “the invention disclosed and claimed in the patent,” we presume that any commercial success of these products is due to the patented invention. This is true even when the product has additional, unclaimed features.

*Id.* at 747 (internal citations and footnote omitted).

Here, Ultratec offered expert opinion establishing CapTel's embodiment of the challenged claims. Ludwick provided claim charts showing how the CapTel phones and service embody the challenged claims. (Appx2437-2444, Appx13270-13273). Ludwick supported the claim charts with observations made during a visit to a CapTel relay. (Appx2436-2437, Appx13269). Ludwick also identified which of the claims-at-issue included each of the inventive features. (Appx2423-2428, Appx13251-13259).

CapTel's embodiment of the challenged claims was never meaningfully disputed during the IPRs. "To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness." *In re Magnum Oil Tools Int'l, Ltd.*, No. 2015-1300, 2016 WL 3974202, at \*10 (Fed. Cir. July 25, 2016).

Here, CaptionCall did not even raise the argument in its Replies. (Appx225-227, Appx3889-3891, Appx7626-7627, Appx11420-11422). Rather, in supplemental declarations submitted with the Replies, CaptionCall offered Occhiogrosso's *ipse dixit* that the CapTel phones and service were not commensurate with the scope of the claims. (Appx1839-1843, Appx5509-5513, Appx9435-9439, Appx12723-12727). But Occhiogrosso did not offer any affirmative evidence or observations to support this speculation. Rather,

Occhiogrosso confined his analysis to identifying supposed inconsistencies in Ludwick's testimony. (Appx1840-1841, Appx5510-5511, Appx9437-9438, Appx12724-12725). Moreover, the PTAB did not rely on Occhiogrosso's speculations in its analysis of Ultratec's evidence of secondary considerations (Appx54-57, Appx3648-3652, Appx7396-7699, Appx11206-11209). Accordingly, this "testimony" did not form the basis for the PTAB's rejection of the uncontroverted evidence of commercial success.

CaptionCall also offered the testimony of Kelby Brick in arguing lack of nexus in its Replies, but this testimony says nothing about CapTel's embodiment of the claims. (Appx226-227, Appx3889-3890, Appx7626-7627, Appx11420-11421). Brick did not offer any affirmative evidence that CapTel phones and services do not embody the claims. (*See* Appx2111, Appx5781, Appx9706, Appx12995). Brick was not qualified to offer such testimony because he admittedly has no technical expertise. (Appx2111, Appx5781, Appx9706, Appx12995). Accordingly, CaptionCall's lack of nexus theory was based on arguments and purported evidence largely unrelated to the claimed inventions, such as CaptionCall's alleged contribution to the market and the alleged features present in the prior art. (Appx225-227, Appx3889-3891, Appx7626-7627, Appx11420-11422). Not surprisingly, the PTAB did not rely on Brick's testimony

in its analysis of Ultratec's evidence of secondary considerations. (Appx54-57, Appx3648-3652, Appx7396-7399, Appx11206-11209).

Without any contradictory evidence regarding CapTel's embodiment of the challenged claims, the PTAB simply dismissed Ludwick's opinions as having "little probative value." (Appx56, Appx3651, Appx7398, Appx11209). The PTAB's sole basis for this conclusion is that Ludwick's opinions were based on "personal observations." (Appx56, Appx3651, Appx7398, Appx11209). Yet, personal observation was an entirely appropriate means for Ludwick to assess whether the CapTel phones and service embody observable claim elements such as: "a microphone connected to pickup voice spoken by the call assistant" (Appx84, 8:25-26); "the telecommunication device displaying in visually readable text the words in the digital text message stream" (Appx3694, 8:21-22); "presenting the text stream to an assisted user via a display" (Appx7442, 10:23); and "displaying the digital text message stream to a captioned telephone display device within sight of the assisted person" (Appx11236, 10:21-23).

Ludwick inspected a CapTel relay and observed the relay operations. (Appx2436-2437, Appx13269). He witnessed CAs processing live calls and he placed and received calls using various CapTel phones. (*Id.*). Ludwick has extensive personal knowledge of CapTel operations from his years of working with

CapTel at Sprint Relay. (*Id.*) Based on these experiences, Ludwick appropriately opined that CapTel phones and service embody the claim elements.

The PTAB relies on *In re American Academy of Science Tech Center*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) to justify disregarding Ludwick's opinions (Appx56, Appx3651, Appx7398, Appx11209), but this reliance is misplaced. *In re American Academy* states that the PTAB "has broad discretion as to the weight to give to declarations," but the PTAB may discount such opinions only if there is a "lack of factual corroboration." 367 F.3d at 1368. Here, there is no lack of factual corroboration. Ludwick provided the factual corroboration by conducting a personal investigation: by inspecting a CapTel relay, observing CapTel CAs process calls, testing CapTel phones, and interviewing CapTel representatives. (Appx2436-2437, Appx13269). The PTAB should have considered this evidence, but improperly discounted it as "conclusory."

CaptionCall never moved to exclude any of Ludwick's testimony. Yet, the PTAB *sua sponte* disregarded Ludwick's testimony and "personal observations" with no briefing on the issues of whether (1) his testimony was based upon sufficient facts or data, (2) his testimony was the product of reliable principles and methods, and (3) he had applied the principles and methods reliably to the facts per Federal Rule of Evidence 702.

Given the lack of meaningful rebuttal from CaptionCall, Ultratec was entitled to receive a presumption that CapTel's commercial success was due to the claimed inventions. The failure to give Ultratec this presumption was a material error. *See PPC Broadband*, 815 F.3d at 746-747.

**VI.C.2.b. The PTAB improperly based its obviousness determinations on expert opinion that did not consider secondary considerations**

The PTAB erred in basing its obviousness determinations on expert opinion that did not consider secondary considerations. Expert opinion cannot properly analyze obviousness when it fails to consider evidence of secondary considerations present in the record. *See, e.g., InTouch Techs., Inc. v. VGO Commc'ns, Inc.*, 751 F.3d 1327, 1348-49 (Fed. Cir. 2014).

Here, the PTAB extensively relied on Occhiogrosso in finding the challenged claims obvious (Appx46, Appx49 (“we credit the testimony of Petitioner’s declarant, Mr. Occhiogrosso, that the features would have been known ...”), Appx53, Appx3621, Appx3644, Appx3648, Appx3654, Appx3655, Appx3658, Appx3660 (“Weighing Mr. Occhiogrosso’s testimony against Mr. Ludwick’s testimony, we credit Mr. Occhiogrosso’s testimony, which provides a reason for combining the references...”), Appx3664, Appx7393, Appx7395, Appx7403, Appx11195, Appx11205, Appx11206).

Yet, Occhiogrosso testified that he did not consider secondary considerations in formulating these opinions. (Appx2641). Occhiogrosso further testified that he did not have any understanding of Ultratec's commercial success or whether others had tried and failed to implement any of the patented features. (Appx2679-2683). Accordingly, Occhiogrosso's testimony is "plagued with numerous problems" and the PTAB's obviousness determinations for the challenged claims, which rely heavily on Occhiogrosso, are similarly plagued. *See InTouch*, 751 F.3d at 1348.

Occhiogrosso attempted a post-hoc fix by "supplementing" his opinions with his "legal understanding" of secondary considerations (Appx1809-1812, Appx5473-5476, Appx9394-9397, Appx12695-12697) and observations on Ultratec's evidence (Appx1837-1843, Appx5507-5513, Appx9433-9439, Appx12722-12727), but Occhiogrosso's supplement does not make his original opinions less flawed. First, Occhiogrosso offered his supplement only after forming his obviousness opinions. (*Compare* Appx828-829, Appx4484-4485, Appx8381-8382, Appx12166-12167 *with* Appx1809-1812, Appx5473-5476, Appx9394-9397, Appx12695-12697). Second, even if Occhiogrosso possessed a "legal understanding" of secondary considerations when forming his opinions, that would not equate to Occhiogrosso actually considering the evidence. Occhiogrosso testified that he did not consider such evidence and specifically did



not have any understanding of Ultratec's commercial success or the failure of others to provide the patented features. (Appx2641, Appx2679-2683). Occhiogrosso did not (because he cannot) claim that he took evidence of secondary considerations into consideration when forming the opinions reflected in his original declaration upon which the PTAB relied.

Accordingly, Occhiogrosso's opinions are flawed and the PTAB's obviousness determinations that rest upon them must be reversed. *See InTouch*, 751 F.3d at 1348-49.

**VI.C.2.c. The PTAB improperly shifted the burden of persuasion by treating Ultratec's evidence of secondary considerations as rebuttal**

The PTAB improperly shifted the burden of persuasion to Ultratec by improperly treating evidence of secondary considerations as rebuttal evidence. "[T]he ultimate burden of persuasion of obviousness must remain on the patent challenger and 'a fact finder must consider *all* evidence of obviousness and nonobviousness before reaching a determination.'" *In re Magnum*, 2016 WL 3974202, at \*6 (emphasis in original).

This Court has previously faulted the PTAB for just this reason. "Objective indicia of nonobviousness play a critical role in the obviousness analysis. They are not just a cumulative or confirmatory part of the obviousness calculus but constitute[] independent evidence of nonobviousness." *Leo Pharm.*, 726 F.3d at

1358 (internal citations and quotations omitted). “[C]onsideration of the objective indicia is *part of* the whole obviousness analysis, not just an afterthought.” *Id.* at 1357 (emphasis in original). “Thus, the Board should give the objective indicia its proper weight and place in the obviousness analysis, and not treat objective indicia of nonobviousness as an afterthought.” *Id.* at 1358.

Here, the PTAB improperly found the challenged claims obvious before it considered Ultratec’s evidence of secondary considerations. For example, before considering Ultratec’s evidence of secondary considerations (Appx54-57), the PTAB concluded that Claims 1 and 2 of the ‘314 Patent were obvious in light of *Wycherley* and *Yamamoto*:

In view of the foregoing, we are persuaded that Petitioner has articulated a sufficient reason to support a conclusion of obviousness in view of Petitioner’s combination of *Wycherley* and *Yamamoto*.

(Appx53).

Only after this “conclusion of obviousness” did the PTAB turn to Ultratec’s evidence of secondary considerations. (Appx54-57). In doing so, the PTAB impermissibly treated Ultratec’s evidence of secondary considerations as an afterthought. After dismissing Ultratec’s evidence from multiple experts as insufficient and inadequate, the PTAB “balanced” Ultratec’s evidence of secondary considerations against CaptionCall’s evidence of obviousness:

When we balance Petitioner’s evidence of obviousness against Patent Owner’s asserted objective evidence of nonobviousness, we determine

that a preponderance of the evidence supports Petitioner's position that claims 1 and 2 would have been obvious over Wycherley and Yamamoto.

(Appx57). The PTAB conducted similar flawed analyses for Claims 1 and 2 of the '346 Patent (*Compare* Appx11206 with Appx11210), Claims 1 and 5 of the '482 Patent (*Compare* Appx3648 with Appx3652), and Claims 7-11 of the '578 Patent (*Compare* Appx7391 with Appx7399).

Accordingly, the PTAB's obviousness determinations must be reversed. *See, e.g., Apple Inc. v. Int'l Trade Comm'n*, 725 F.3d 1356, 1365-67 (Fed. Cir. 2013); *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1355-57 (Fed. Cir. 2013).

***VI.C.3. Had the PTAB Properly Considered Ultratec's Evidence of Secondary Considerations, It Would Have Found Nonobviousness***

Had the PTAB properly considered Ultratec's evidence of secondary considerations, it would have found that Ultratec's inventions, as embodied by CapTel, met long-felt, but unmet, needs, received praise in the industry, and experienced commercial success. The PTAB's refusal to make these findings is reversible error.

***VI.C.3.a. Ultratec achieved faster and more accurate captioning***

Ultratec met a long-felt, but unmet, need for faster captioning. As explained in Section IV.A.2.a, prior to CapTel, the hard-of-hearing community depended on traditional relays. (Appx2456-2458, Appx2515-2516). The slowness of traditional

relays deterred assisted users and hearing users alike from using the service. (Appx2465-2466, Appx2521).

Revoicing met the need for faster captioning. (Appx2423-2427, Appx2463-2464, Appx2520-2523, Appx13251-13252). Revoicing significantly decreases the delay in captioning because a CA can revoice at approximately 150-200 words per minute, much closer to the normal rate of speech than typing, at 40-60 words per minute. (Appx2464-2465). Revoicing also produced more accurate captions than typing, which further aided the assisted user's understanding of the communication. (Appx2466, Appx2467, Appx2470, Appx2471-2472).

As explained in Section IV.A.3, users of CapTel sent numerous comments to the FCC remarking upon how much faster CapTel was in comparison to traditional relays and how important that difference in speed was to them. (Appx2469, Appx2524-2525). And Ultratec received industry praise for the speed of CapTel's captions due to revoicing. (Appx2470-2472, Appx2525-2527).

### **VI.C.3.b. Ultratec achieved a more natural call**

Ultratec met a long-felt, but unmet, need for a more natural-feeling call. As explained in Section IV.A.2.b, traditional relays were unnatural and obtrusive because the assisted user only received text of the conversation and the traditional relay inserted an intermediary in the middle of the conversation. (Appx2476-2478, Appx2484, Appx2530-2531). This was undesirable for many hard-of-hearing

individuals because it did not allow them to use residual hearing to discern emotion and tone. (Appx2476, Appx2532).

Voice and revoiced text met the need for a more natural call. (Appx2473-2476, Appx2532-2533, Appx2427-2429, Appx13256, Appx7440, 6:34-46, Appx11236, 9:3-13). In such cases, the hearing user may not know there is a relay involved in the call. (Appx2485-86).

As explained in Section IV.A.3, users of CapTel sent numerous comments to the FCC remarking upon how beneficial it was to receive both voice and text and how much more natural it was to not interact with a CA. (Appx2477-2481, Appx2534-2537). And Ultratec received praise for the naturalness of CapTel's calls from various industry members. (Appx2485-2489, Appx2538-2541).

### **VI.C.3.c. Ultratec achieved commercial success**

CapTel experienced commercial success, in part due to its inventive features of revoicing and voice and revoiced text. (Appx2429-2436, Appx13261-13269). As explained in Section IV.A.3, since CapTel's launch, the use of CTS has steadily climbed, in comparison to and at the expense of the use of traditional relay service, which does not employ these inventive features. (Appx2432-2433, Appx13264-13265). Despite this evidence, the PTAB refused to find that CapTel achieved any commercial success and that the commercial success was due to its inventive features. (Appx54-57, Appx3648-3652, Appx7396-7399, Appx11206-11209).

**VI.D. The PTAB’s Construction of “trained to the voice of the call assistant” is Unreasonable and Shifted Throughout the Proceedings**

The Court should reverse the PTAB’s patentability determinations on Claims 1-2 of the ‘314 Patent (IPR2013-00540), Claims 1-15 of the ‘482 Patent (IPR2013-00541), Claims 7-11 of the ‘578 Patent (IPR2013-00544), and Claim 1 of the ‘346 Patent (IPR2013-00545) because: (1) the PTAB deprived Ultratec of its rights by changing the construction applied to “trained to the voice of the call assistant” throughout the proceeding; (2) the PTAB arrived at a final construction of the term that was unreasonable; (3) the PTAB failed to construe all of the terms in the limitation; and (4) no record evidence supports a finding that the “trained to the voice of the call assistant” limitation is in the asserted prior art under the proper construction.

***VI.D.1. The Legal Standard***

The PTAB gives claims in an unexpired patent their broadest reasonable interpretation (“BRI”) *in light of the specification*. 37 C.F.R. § 42.100(b); *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1275 (Fed. Cir. 2015), *aff’d*, *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131 (2016). A construction is unreasonable when it is inconsistent with the manner in which a claim term is used throughout the specification. *See PPC Broadband*, 815 F.3d at 755. Even under the BRI standard, “the specification is the single best guide to the meaning of a disputed

term and usually, it is dispositive.” *SAS Inst., Inc. v. ComplementSoft, LLC.*, 825 F.3d 1341, 1347 (Fed. Cir. 2016) (internal quotations omitted).

The Administrative Procedure Act entitles litigants before an administrative agency to timely notice of “the matters of fact and law asserted.” 5 U.S.C. § 554(b)(3). Applying Section 554(b)(3) in IPR proceedings, this Court has held that the PTAB may not apply a claim construction in the decision to institute, accept argument and evidence under that construction, and then set out a different construction in the final written decision. *SAS Inst.*, 825 F.3d at 1351. Shifting the applied claim construction in this manner constitutes reversible error because it denies the patent owner its procedural rights by preventing any opportunity to defend its patent under the new construction. *See Dell Inc. v. Accelaron, LLC*, 818 F.3d 1293, 1301 (Fed. Cir. 2016). Additionally, where the PTAB findings of unpatentability are dependent on an erroneous construction, and contain no record evidence showing unpatentability under the correct construction, reversal and confirmation of patentability is required. *See Pride Mobility Prod. Corp. v. Permobil, Inc.*, 818 F.3d 1307, 1315 (Fed. Cir. 2016).

***VI.D.2. The PTAB Impermissibly Changed its Construction in the Final Written Decision***

From the petitions, to the institution decisions, to Ultratec’s patent owner responses, the understanding of all the participants in the subject IPRs was that “trained to the voice of the call assistant” means what it says, even under the BRI

standard, that the software is trained to the voice of an individual CA. As explained below, this was the understanding implicit in CaptionCall's petitions, it was the understanding adopted by the PTAB in its initiation decisions, and was the basis for Ultratec's arguments distinguishing the prior art. When the final written decisions issued, however, it was clear that the PTAB had adopted a vastly broader construction of the term; that "trained to the voice of the call assistant" could also mean programmed (hardcoded) to a voice pattern shared among multiple CAs. This construction is erroneous, and its sudden appearance in the final written decisions constitutes legal error.

Each of the claims under appeal, except Claim 2 of the '346 Patent, require the use of voice recognition software "trained to the voice of the call assistant" to translate the words spoken by the hearing user into text. (*See* Appx3694, 8:13-16, 8:60-61, Appx3695, 9:24-25, 10:16-17, Appx11236, 10:13, Appx7442, 9:23, 10:19-20, Appx84, 8:29-30, 8:48-49). This method of generating text was a key inventive aspect of the Ultratec patents because it dramatically increased the speed of captioning over prior art systems, which were limited to the speed at which the CAs could type. (*See* Appx78, Appx3688, Appx2463-2464, Appx2424-2425, Appx2521-2522, Appx7428, Appx11228).

The specifications of the Ultratec patents make clear that the only reasonable construction of voice recognition software "trained to the voice of the call



assistant” is that the software is trained to the voice of a specific, individual CA.

For example, the specifications of the ‘482, ‘314, and ‘346 Patents each provide:

It is a limitation of currently available speech recognition software that the software must be *trained or adapted to a particular user*, before it can accurately transcribe what words the user speaks. Accordingly, it is envisioned here that the call assistant operates at a computer terminal which contains a copy of a voice recognition software package which is *specifically trained to the voice of that particular call assistant*.

(Appx3693, 5:40-47, Appx11234, 6:16-23, Appx83, 5:40-47) (emphasis added).

Similarly, the ‘578 Patent provides that “[t]he words spoken by the call assistant are recognized by a speech recognition computer program which has been trained to the voice pattern of **the** call assistant...” (Appx7438, 2:43-46 (emphasis added)). The Abstracts of the ‘482, ‘314, and ‘346 Patents also teach that the contemplated voice recognition software is trained to the voice of an individual:

To overcome the speed limitations inherent in typing, the call assistant at the relay does not type most words but, instead, re-voices the words spoken by the hearing person into a computer operating a voice recognition software package trained to the voice of *that call assistant*.

(Appx78, Appx3688, Appx11228 (emphasis added)).

In its institution decisions, the PTAB applied the patents’ teaching of “trained to the voice.” For example, the PTAB described the system of the ‘482 and ‘314 Patents as follows:

Instead of typing the hearing user’s words, the call assistant speaks those words into a microphone that transmits the voice of the call

assistant to a computer with voice recognition software that is *trained specifically to the voice of the call assistant*.

(Appx3766 (emphasis added), Appx127 (same)). The PTAB used similar language to describe the invention in the ‘578 Patent. (*See* Appx7512 (referring to “voice recognition software trained specifically to the voice of the call assistant”)). In the institution decision for the ‘346 Patent, the PTAB observed correctly that that patent disclosed a CA “repeating the hearing user’s words to a computer provided with voice recognition software trained to the voice of *the* call assistant.” (Appx11306 (emphasis added)).

CaptionCall also accepted and applied this construction of “trained to the voice” throughout the proceedings. For example, when likening the *Wycherley* reference to the challenged claims, three of the petitions asserted, “it was well known in the art that speech recognition software was more accurate when trained to the voice of a particular user.” (Appx97, Appx3708-3709, Appx7466, Appx11254). CaptionCall’s expert applied the same understanding. (*See* Appx4489, Appx832-833, Appx8728, Appx12170).

In its patent owner responses, Ultratec relied on the PTAB’s and CaptionCall’s implicit construction; Ultratec argued that the *Ryan* reference—relied on by the PTAB for disclosure of the otherwise elusive “trained to the voice” limitation—does not actually disclose software trained to the voice of a particular

individual. (Appx185-186, Appx3840-3841, Appx7574-7575, Appx11364-11365).

In its replies, CaptionCall argued for the first time that “the claims do not actually require that voice recognition software be trained to the voice of one and only one CA.” (Appx219, Appx3881, Appx11411-11412, *see also* Appx7618). However, CaptionCall never argued that the “trained” element referred to software trained to shared characteristics of groups of individuals, which is the PTAB’s construction.

In the final written decisions, the PTAB skirted Ultratec’s merits-based argument by introducing an express construction of the “trained” limitation for the first time, which stretched the term to cover software trained to whole groups of individuals. (Appx10-12, Appx3600-3602, Appx7363-7365, Appx11177-11180). Seizing on a single occurrence of the word “pattern” in the shared specification—a word that does not occur in the claims—the PTAB posited:

The Specification, however, in its “Brief Summary of the Invention” indicates “a speech recognition computer program which has been trained to the voice *pattern* of the call assistant.” Ex. 1001, 2:46-48 (emphasis added) .... Thus, we will not limit “trained to the voice of the call assistant” to require training to the voice of only one particular call assistant, because the claim language encompasses the invention as disclosed in the Specification—software trained to a voice *pattern* of a call assistant. Ex. 1001, 2:41-49 (“Summary of the Invention”).

(Appx3600-3602, Appx12-13 (same), Appx7364-7365 (same), Appx11179-11180 (same)). As is set forth below, this new claim construction allowed the PTAB to

sidestep Ultratec's arguments on the *Ryan* reference, and find the challenged claims unpatentable.

As the Court held in *SAS Institute*, 825 F.3d at 1351, the PTAB's reliance on a new claim construction, introduced for the first time in its final written decision, constitutes reversible error. Here, not only were Ultratec's procedural rights violated, entitling it to reversal, but for the reasons set forth below, the construction ultimately picked by the PTAB is wrong.

***VI.D.3. The PTAB's Construction in the Final Written Decision is Erroneous***

The construction of "trained to the voice of the call assistant" that the PTAB ultimately applied is unreasonable and erroneous because it is inconsistent with the use of that phrase throughout the specifications of the Ultratec patents.

The PTAB construed the element as encompassing software that may be preprogrammed for the voice pattern shared by groups of CAs, stating:

The Specification, however, does not indicate expressly that the voice recognition software is trained to the voice of only that particular call assistant or otherwise indicate the voice recognition software is trained for the voice of only one call assistant.

(Appx3601, *see also* Appx12, Appx7364-7365, Appx11180). The PTAB's justification for this construction was a single reference in the specifications to the "voice pattern of the call assistant." (Appx11, Appx3600-3601, Appx7364, Appx11179, *see also* Appx67-68, Appx3677, Appx7415, Appx11221). However,

the remainder of the specification makes clear that Ultratec’s interpretation—which was also the original interpretation of the PTAB and CaptionCall—was the appropriate construction. More importantly, the remainder of the specifications makes clear that the PTAB’s broad read of the “trained to the voice” term is not reasonable. *SAS Inst.*, 825 F.3d at 1348 (“even under the broadest reasonable interpretation, the Board’s construction cannot be divorced from the specification and the record evidence, and must be consistent with the one that those skilled in the art would reach”) (internal quotation and citation omitted).

First, the PTAB failed to explain why “voice pattern of the call assistant” would mean anything other than the voice of that particular CA, *i.e.*, a voice pattern unique to an individual. The PTAB used “pattern” as the hook to construe the element as referring to a shared voice pattern, but supplies no analysis to jump from point A to point B. Neither party presented evidence on what a “pattern” would mean to a POSA. Without evidence, the PTAB’s assumption violates the APA. *See* 5 U.S.C. § 554(b)(3).

Moreover, the specifications belie the PTAB’s new construction. For example, the specifications of the ‘482, ‘314, and ‘346 Patents consistently describes software “adapted to a *particular* user” or “specifically trained to the voice of *that particular* call assistant” (Appx83, 5:42, Appx3693, 5:42, Appx11234, 6:18-19, 6:23-24 (emphasis added); *see also* Appx7439, 3:51-53

(incorporating the “revoicing-relay” disclosure of the ‘482 Patent by reference). The Abstracts of those patents similarly emphasize that the software is trained to the individual voices of individual CAs. (Appx78, Appx3688, Appx11228 (“voice recognition software package trained to the voice of *that call assistant*”) (emphasis added)). Even within the very portion of the specification relied on by the PTAB, the language makes clear that the speech recognition program is trained to the voice of an *individual* and not to a style of speech shared by more than one CA: “The words spoken by the call assistant are recognized by a speech recognition computer program which has been trained to the voice pattern of *the* call assistant ....” (Appx3691, 2:45-48, Appx81, 2:45-48, Appx11232, 2:50-53, Appx7438, 2:43-46) (emphasis added). The use of the definite article “the” shows that even this portion of the specification is referring to the voice pattern of *one CA*, and not of a group of CAs. Nothing in the specifications indicates that “voice pattern” might refer to shared characteristics of the speech or voices of groups of individuals.

Most importantly, the claim language itself makes clear that “trained to the voice of the call assistant” refers to a particular individual CA. The claim language does not use the phrase “voice pattern,” which the PTAB imports from the specification into the claim to *broaden* it. Instead, the claims recite “*the* voice of *the* call assistant,” again using definite articles to refer to an individual. (*See*

Appx3694, 8:14, Appx84, 8:30-31, 8:48-49, Appx11236, 10:13, Appx7442, 9:23 10:20-21).

Where the specification and claim language is consistent with only one construction of a claim element, that construction is the broadest *reasonable* interpretation. *PPC Broadband*, 815 F.3d at 755. That is the case here. The PTAB’s construction is inconsistent with the use of the term in the specification and claims, and is therefore unreasonable and erroneous.

***VI.D.4. The PTAB’s Determination of Unpatentability Relies on its Erroneous Construction***

All of the claims subject to this appeal, except Claim 2 of the ‘346 Patent, include the “trained” limitation. The PTAB based its determination that *Ryan* disclosed the “trained” limitation entirely on the PTAB’s erroneous construction.

In its patent owner responses, Ultratec demonstrated that *Ryan* did not disclose the “trained to the voice” limitation because the software in *Ryan* was preprogrammed for the voices of groups of individuals (e.g., a regional accent) rather than the voice of a particular individual. (Appx185-186, Appx3840-3841, Appx7574-7575, Appx11364-11365, *see also* Appx6690 (“*Ryan* literally describes software that is designed to recognize particular voices or groups of voices (such as those that are female or have a particular accent), not software that is trainable to any given person’s voice.”), Appx3019-3020, Appx10592-10593, Appx13222-13223). Yet, the PTAB made no *finding*, in either the final written decisions, or in

the denials of rehearing, that *Ryan* actually discloses voice recognition software trained to the voice of an *individual* as opposed to of a voice pattern of a group. (See Appx32-33, Appx3626-3627, Appx7379-7381, Appx11198, *see also* Appx67-68, Appx3677-3678, Appx7415-7418, Appx11221-11222). Nor did the PTAB substantiate its dismissal of Ultratec's reading of *Ryan*. Rather, the PTAB skirted the issue of *Ryan*'s disclosure, relying on the new and erroneous claim construction. Because the PTAB failed to find that *Ryan* discloses the claimed "trained" element as correctly construed, the PTAB's decisions must be reversed. *Pride Mobility*, 818 F.3d at 1315 (reversing and confirming patentability where PTAB failed to find an element present in the art under the correct claim construction).

***VI.D.5. Even Under the PTAB's Construction, Ryan Fails to Disclose this Element***

Even under the PTAB's construction of "trained to the voice of the call assistant," the Court should reverse because *Ryan* fails to disclose this element, instead reciting "software [that] is specifically designed" to recognize the voices of relay agents. (Appx687, 4:33-34).

As Ultratec argued, while the claimed software had to be "*trained*," meaning adapted *after* it was initially designed, the *Ryan* reference only discloses software that is "*specifically designed* to recognize the voice of particular relay agents...", *i.e.*, programmed at the coding stage before the software is implemented or



executed. (Appx3838-3840, Appx183-185, Appx7572-7574, Appx11361-11363). In rejecting this argument, the PTAB asserted that the Ultratec specifications do not define “training” and do not indicate how or when it occurs. (Appx11, Appx3601, Appx7364, Appx11179). On that basis, the PTAB declined to “limit ‘trained to the voice of the call assistant’ to a particular time in which the training must occur or to a particular manner of training that is not found in the claims nor the Specification.” (Appx12, *see also* Appx3602, Appx7365, Appx11180). The PTAB later erroneously claimed that Ultratec admitted that *Ryan* discloses software that is trained, albeit at the point of the design. (*See* Appx3624, *see also* Appx31, Appx7378-7379, Appx11196). The methodology employed by the PTAB, including its reliance on phantom admissions, as well as its ultimate conclusions of anticipation and obviousness, were erroneous.

First, while acknowledging that the parties disagreed on the meaning of “trained” (Appx10-11, Appx3600-3601, Appx7363-7364, Appx11177-11178), the PTAB refused to construe that term. Instead, the PTAB merely found that whatever “trained” meant, training might occur when a piece of software was initially built. (Appx12, Appx3602, Appx7364-7365, Appx11180). But this does not mean that “designing” a piece of software, which is what *Ryan* discloses, is the same as “training.” The PTAB cannot make such a determination (and this Court cannot review it), without articulating a meaning for software that can be “trained”

that can be compared with *Ryan*'s disclosure of software that is "designed." Importantly, nowhere does the PTAB find that the plain and ordinary meaning of the term "trained" necessarily includes "designed." The PTAB's failure to provide an explicit construction of the disputed "trained" term is reversible error. *See CSR, PLC v. Skullcandy, Inc.*, 594 F. App'x 672, 677-78 (Fed. Cir. 2014).

Second, the PTAB's suggestion that software may be "trained" at the moment it is built is unreasonable in view of the specifications and the claims. *PPC Broadband*, 815 F.3d at 755. The claims refer to software that is "trained to the voice of the call assistant." (*See, e.g.*, Appx3694, 8:14, Appx84, 8:30-31, Appx11236, 10:13, Appx7442, 9:23). For the reasons set forth above, this claim element must refer to training the software to recognize the speech of an individual CA. *See* Sec. VI.D.3. If, as the PTAB suggests, the voice recognition software of the claims can be trained as it is being built, it would be limited to one and only one individual CA, and would have to be rebuilt for every subsequent CA. Under these circumstances, the only reasonable interpretation of "trained" is that the software is trainable, to anyone's voice, after it has been initially coded. (*See* Appx3019-3020, ¶ 22 (testifying that the claims require "software that is trainable to any given person's voice."), Appx6690, ¶ 22, Appx10592-10593, ¶ 22; *see also* Appx13222-13223, ¶ 20 ("In contrast, the '346 patent requires that the software is trained to recognize individual voices; the CAs are clearly not expected to write

source code, but instead to work with ‘trainable’ software to improve its recognition of their individual speech patterns.”)). This construction is confirmed by the specifications, which state that “[i]t is a limitation of currently available speech recognition software that the software must be trained or adapted to a particular user, before it can accurately transcribe what words the user speaks.” (Appx11234, 6:16-19, Appx3693, 5:40-43, Appx83, 5:40-43; *see also* Appx7439, 3:51-53 (incorporating by reference the revoicing strategy described in the ‘482 Patent)). Here, the specification contemplates a pre-existing software package that must “learn” a CA’s voice by training so that it is usable by *that* CA. That the training must occur after the software has already been built is the only reasonable construction.

Third, nothing in the *Ryan* reference or elsewhere in the record supports the PTAB’s finding that *Ryan* discloses software that is “trained,” even at the point of its creation, instead of “specifically designed,” which is what *Ryan* actually discloses. (Appx687, 4:33-38). The PTAB avoids making factual findings regarding *Ryan*’s disclosure by misinterpreting Ultratec’s statements about the reference. (*See* Appx3624, Appx31, Appx11196, Appx7378-7379). Ultratec never acknowledged that *Ryan* discloses “trained” software; indeed, Ultratec has consistently maintained that it does not. In its response in IPR2013-00540, for example, Ultratec asserted:

[O]ne must look to the literal meaning of [*Ryan*'s disclosure], which is that the software is designed, i.e., written (or, in other words, hard coded), to specifically recognize the voice of a particular individual. Software is designed in advance of implementation at the source code level. In contrast, the '314 Patent requires that the software is trained to recognize individual voices. Trainable software is obviously very different than hard coded software.

(Appx184 (citations omitted), *see also* Appx3839, Appx7573, Appx11362). Thus, even if a piece of software may be "trained" at the initial coding stage, the PTAB never makes the required factual finding that *Ryan* discloses such training. *See Nike*, 812 F.3d at 1344. Because *Ryan* does not disclose training, and the PTAB made no finding that it did, the Court must reverse the PTAB's determinations and confirm the patentability of Claims 1 and 2 of the '314 Patent, Claims 1 and 5 of the '482 Patent, 7-11 of the '578 Patent and Claim 1 of the '346 Patent over *Ryan*.

**VI.E. The PTAB Erred in Finding a Motivation to Combine *Ryan* and *Alshawi* For Purposes of Rendering the Claims of the '346 Patent Obvious**

The PTAB erred in finding a motivation to combine *Alshawi* and *Ryan* to render the claims of the '346 Patent obvious. There is no motivation to combine the disclosures of *Alshawi* and *Ryan* because the references teach away from one another and changing the principle of operation of *Ryan* to justify the combination is improper. Accordingly, the PTAB's decision must be reversed.

***VI.E.1. The Teachings of *Ryan* and *Alshawi****

The claims of the '346 Patent are directed to a telecommunications relay system that generates captioned text by having a CA revoice the hearing user's

words in voice recognition software that has been trained to the voice of that CA. (Appx11236, 10:9-16, 10:29-39). Both the text captions and the voice of the hearing user are sent to the assisted user's device. (*Id.*, 10:21-25, 10:40-43). The PTAB found each claim obvious over the combination of *Ryan* and *Alshawi*. (Appx11210).

While both *Alshawi* and *Ryan* are directed, at a high level, toward communication systems, each reference emphasizes different, and incompatible, aspects of communication, and each reference teaches against the adopted combination.

*Ryan* describes a system that corrects errors made when transcribing voice into text to be displayed on TDDs, which are assistive devices that “display[] textual messages and also allow[] a user to type out his or her portion of the conversation.” (Appx686, 1:26-28). *Ryan* states “[t]he present invention overcomes the problems associated with existing telecommunications relay services by providing a system and method for correcting mistakes before the message is displayed at the end user's TDD.” (Appx686, 2:35-38). *Ryan* accomplishes this error correction by holding transcribed words in a buffer, applying a spell check program, highlighting apparently misspelled words, and then allowing automatic or manual correction before the word is sent to the TDD. (See Appx686, 2:42-58, Appx688, 5:23-44, Appx685, Fig. 2).

*Ryan* emphasizes the importance of delaying the sending of text so that transcription errors can be corrected: “it is an important object of the present invention to provide a system and method for making corrections to words in a message before the words are displayed at the TDD.” (Appx686, 2:59-62). Where prior art systems sent text captions continuously, on a character-by-character basis (*see, e.g.*, Appx686, 2:62-67), the system of *Ryan* stores whole words in a two-stage “buffer” process so that the relay agent can correct errors prior to sending. First, “[a]t step 30, the program clears the edit text buffer in preparation for acceptance of the next word in a message.... While a word is still in the edit text buffer, typographical and spelling errors in the word may be manually corrected.” (Appx688, 5:26-27, 5:36-37). After this manual editing step, *Ryan*’s relay agent selects an “end of word” or delimiter key (*id.*, 5:45-47), and the word is moved to a second buffer, the “transmit text buffer” (*id.*, 6:8-12), where the word is automatically spell checked and corrected if necessary (*id.*, 6:16-28). Only after this correction process is the word transmitted to the deaf user’s TDD. (*Id.*, 6:31-41). Thus, the entire focus of *Ryan*’s disclosure, as well as its contribution to the art, is to delay the transmission of text so that it can be corrected. As *Ryan* summarizes its invention: “[i]n this way, improved spelling accuracy will increase customer satisfaction with the relay service despite the slight delay that is likely to

occur while the text is being analyzed in accordance with the present invention.” (Appx686, 2:54-58).

*Alshawi* is designed to aid cross-language communication; it is not directed to telecommunications for the hearing impaired. (See Appx11844, 1:5-8 (“This invention relates to a method and apparatus for providing continuous speech-to-subtitles translation for communication between people speaking different languages.”)). *Alshawi* describes a system using videophones to provide translated captions of foreign language speech overlaid on video of the foreign-language user. (*Id.*, 1:44-51).

In contrast to *Ryan*, *Alshawi* stresses the importance of *rapid* transmission of translated text captions, so that they are synched to the voice of the speaker. *Alshawi* describes translators that used synthesized voice as “awkward and unnatural” because of the long delay between the speaker’s original speech and the arrival of a synthesized voice translation. (Appx11844, 1:31-34). To overcome this shortcoming, *Alshawi* proposes a system in which “a translation of each user’s speech is displayed *continuously* in text form on the other user’s screen. *At the same time*, the original, untranslated speech is played over a speaker.” (Appx11844, 1:48-51 (emphasis added); see also Appx11845, 3:25-28 (“[T]he receiving party can *simultaneously* hear the original speech of the sending party and view the video of the sending party overlaid with subtitles translating the

sending party's speech.") (emphasis added)). The asserted result of providing the original voice and the translated text at the same time is more natural communication:

Because users hear the actual voice of the other party, the communication is more personal and is likely to be perceived to be of higher quality. ... Also, in the event that an imperfect translation takes place, users can look over the stream of translated words and make use of their knowledge of the other language to try to reconstruct the intended meaning. Moreover, because the original untranslated speech is provided audibly and the translated text is provided visually, users can employ any knowledge they may have of the original language.

(Appx11844, 1:66-2:10).

Thus, where *Ryan* emphasizes delaying text so that it may be corrected, *Alshawi* emphasizes the importance of minimizing delays between text and voice, even at the expense of accuracy, so that the user can obtain all of the advantages of synchronized voice and text. Yet, the PTAB adopted CaptionCall's proposed combination of *Ryan*'s relay service modified to include *Alshawi*'s asserted disclosure of the transmission of voice and captions. (Appx11203-11206).

***VI.E.2. The PTAB's Findings on Motivation to Combine are Not Based on Substantial Evidence and Rely on a Misapprehension of the Legal Standard***

"A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was



taken by the applicant.” *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). Here the references discourage the combination because *Ryan* emphasizes the importance of delaying transmission of text (*see* Appx686, 2:59-62), whereas *Alshawi* prevents precisely the sort of “awkward and unnatural” communication that would result from *Ryan*’s error correction steps by providing synchronous audio and translated subtitles (*see* Appx11844, 1:31-34, 1:49-52, Appx11845, 3:25-28).

CaptionCall and the PTAB both recognized that *Alshawi* emphasizes that voice and text must be sent at the same time. (Appx11192, Appx11261). In fact, the PTAB cites it as one of the interrelated teachings that would have allegedly motivated the combination, noting that, “like *Ryan*, *Alshawi* ‘was also concerned with accuracy in communication, and recognized that misunderstandings could be reduced by providing both voice and text to a caller.’” (Appx11203 (quoting *Occhiogrosso*)). Pursuant to the PTAB’s rationale, a POSA would allegedly be motivated to combine *Ryan* and *Alshawi* in order to improve accuracy of communication by providing two communication channels—voice and text—instead of one. (Appx11203, Appx11205-11206). However, the PTAB fails to address that the strategies for addressing accuracy in *Alshawi* and *Ryan* are at odds; *Alshawi* teaches that communication is improved, or made more accurate, if the voice and text are sent at the same time, whereas *Ryan* improves accuracy by

slowing down text transmission. Thus, the combination would actually fail to realize the advantage that the PTAB decided would have motivated its creation.

The PTAB attempts to address the incompatibility of the references by proposing to eliminate *Ryan*'s error correction from the proposed combination: "a person of ordinary skill in the art need not include the error correction of Ryan in the combination because the claims do not require error correction." (Appx11205, *see also* Appx11206). Yet, this *admits* that a POSA would only combine the references after *Ryan* was altered in a way that changes its principle of operation and prevents it from fulfilling its intended purpose.

Combinations that change the "basic principles under which the [prior art] was designed to operate," *In re Ratti*, 270 F.2d 810, 813 (1959), or that render the prior art "inoperable for its intended purpose," may be non-obvious. *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984). In the controlling case of *In re Mouttet*, the Court found that the principle of operation of a prior art patent's disclosed device could be determined by looking at the high-level functionality of the disclosed invention. 686 F.3d 1322, 1332 (Fed. Cir. 2012). More recently, in *Plas-Pak Industries, Inc. v. Sulzer Mixpac AG*, the Court ratified the PTAB's decision to look to a reference's statement about what constituted "the invention" to determine the disclosed device's principle of operation. 600 F. App'x 755, 758 (Fed. Cir. 2015). Even in *In re Umbarger*, where the Court declined to limit a reference's

principle of operation to the intricacies of its particular implementation of the invention, the Court still defined the principle of operation broadly in relation to what the disclosed invention was specifically intended to accomplish. 407 F.2d 425, 430 (Fed. Cir. 1969).

The only reasonable conclusion is that *Ryan*'s principle of operation, and certainly its intended purpose, is delaying the sending of captions so that errors can be corrected. The problem *Ryan* set out to solve is the presence of typographical errors in captioning. (Appx686, 2:1-3 ("A common problem with the existing telecommunications relay services is that the relay agent's typographical errors appear at the TDD display.")). "The present invention overcomes the problems associated with existing telecommunications relay services by providing a system and method for correcting mistakes before the message is displayed at the end user's TDD." (*Id.*, 2:35-37). *Ryan* includes its error correction methodology in all independent claims. (See Appx689, 8:51-58, Appx690, 9:9-17, 10:9-16).

The PTAB attempted to skirt this issue by positing: "the principle of operation of the portion of *Ryan* used in the combination is having a relay agent repeat a hearing user's words to provide text to an assisted user and that principle of operation is unchanged in the combination." (Appx11206). Thus, the PTAB decomposed *Ryan* into the individual components relied on in the proposed combination, and then concluded that since those individual components are

present in the combination, the combination does not alter the principle of operation of the reference.

This granular approach to determining a reference's principle of operation is a legal determination that this Court should review *de novo*. *In re Elsner*, 381 F.3d 1125, 1127 (Fed. Cir. 2004). The PTAB's approach finds no support in the law of this Court. Rather, the Court's focus has always been to look *broadly* at the device or system described in the reference. *In re Mouttet*, 686 F.3d at 1332; *Plas-Pak Indus.*, 600 F. App'x 755, 758. Indeed, under the PTAB's methodology, no combination would ever alter the principle of operation of a reference, since no obviousness combination would ever alter functionality of those *portions* of the reference used in the combination.

It is instructive to compare the PTAB's granular treatment of principle of operation here, with its analysis of the principle of operation of the *McLaughlin* reference in connection with the '578 Patent. There, the PTAB rejected Ultratec's argument that *McLaughlin*'s principle of operation included its method of generating text, and instead looked to *McLaughlin*'s overall "focus" to determine its principle of operation. (Appx7420-7421 ("McLaughlin focuses on a network configuration that uses simultaneous voice and data (SVD) modems in conjunction with a relay, not the details of how a relay translates voice to text during a call between a remote user and an assisted user.")). Here, the PTAB applied an inverse

standard with *Ryan*. Instead of looking to the reference's overall focus, the PTAB plucked a single, isolated teaching that occurs in a single sentence in the reference, and declared that to be *Ryan*'s principle of operation. (Appx11206). The PTAB's use of two opposite methodologies for uncovering the principles of operation of *Ryan* and *McLaughlin* is arbitrary, and if the PTAB was correct in its analysis of *McLaughlin*—that the inquiry involves looking at a reference's overall focus—its findings regarding *Ryan*'s principle of operation are incorrect as a matter of law.

Indeed, even under the substantial evidence standard, no reasonable mind would conclude that *Ryan*'s principle of operation is limited to the purported revoicing disclosure for which *Ryan* is used. *See In re Mouttet*, 686 F.3d at 1332. *Ryan*'s alleged disclosure of revoicing occurs *once* in the reference, *in a single sentence*. (Appx687, 4:33-39). When weighed against the entirety of the rest of the reference, there is no substantial evidence that *Ryan*'s principle of operation is anything other than delay for error correction.

**VI.F. The PTAB Erred in Finding Claims 8-11 of the '578 Patent Obvious Over *McLaughlin* and *Ryan***

The Court should reverse the PTAB's determination as to motivation to combine the references because they are not based on substantial evidence.

***VI.F.1. The PTAB’s Rationale for Motivation to Combine is Contradicted by the Relied-Upon References***

The PTAB found Claims 8-11 of the ‘578 Patent unpatentable in view of the combination of *McLaughlin* and *Ryan*.<sup>14</sup> (See Appx7418-7421).<sup>15</sup> In setting forth its revised motivation to combine in the Order on Rehearing, the PTAB relied on alleged interrelated teachings between *McLaughlin* and *Ryan* regarding the desirability of “automation”:

Thus, *McLaughlin* teaches the use of automated equipment at a relay, Ex. 1009, 29:20–22, and *Ryan* teaches a computer with speech recognition software as one form of automated equipment that can be used at a relay, Ex. 1004, 4:33–38. *McLaughlin* also notes the use of computerized speech recognition in another, but similar, context, i.e., translation of voice mail messages from voice to text. Ex. 1009, 26:59–62. A person of ordinary skill in the art would have recognized that *Ryan*’s intermediate re-voicing solution—using voice recognition software trained to the voice of a call assistant at a relay—would address the shortcomings of applying voice recognition directly to a remote caller’s voice, acknowledged by *McLaughlin*.

(Appx7419-7420). Here, the PTAB seemed to suggest that a POSA: (1) would recognize that *McLaughlin* uses voice recognition software for automation (*i.e.*, in the context of applying voice recognition to recorded voicemail messages)

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<sup>14</sup> The PTAB did not directly find Claim 7 unpatentable in view of this combination because the PTAB found Claim 7 to have an earlier priority date. However, the PTAB noted that, if the preamble of Claim 7 is limiting, that would move its priority date and the PTAB’s analysis with respect to Claim 8 would likewise apply to Claim 7. (Appx7402).

<sup>15</sup> In response to arguments regarding motivation to combine made by Ultratec in its request for rehearing, the PTAB “replaced” the section on motivation to combine *Ryan* and *McLaughlin* in the final written decision with pages 10-13 of its order denying rehearing. (Appx7418).

(Appx8147, 2920-22, Appx8145, 26:54-62); (2) would look to *Ryan* as an example of the use of voice recognition for automation (Appx687, 4:19-28 (describing the use of voice recognition directly on the voice of the relay caller)); and (3) while reading *Ryan*, would discover *Ryan*'s alleged teaching that trained voice recognition used by the relay could improve accuracy.

The PTAB, however, failed to identify substantial evidence indicating why a POSA who was hunting for ways to automate relay functions would pull *Ryan*'s asserted revoicing relay into *McLaughlin*. Replacing *McLaughlin*'s typed relay with a revoicing relay does not eliminate, or even reduce, the need for CAs; the text is still generated by a person in the proposed combination. The meandering path suggested by the PTAB through the references—that a POSA interested in automating a relay would look to *Ryan* and pick out a teaching unrelated to, and which does not result in, automation from that reference, and then insert that teaching into the proposed combination—is a path only possible when impermissibility guided by hindsight. Accordingly, the Court should reverse. *See Leo Pharm.*, 726 F.3d at 1354 (reversing PTAB obviousness determination where “the Board erred by collapsing the obvious analysis into a hindsight-guided combination of element.”).

***VI.F.2. The PTAB's Finding that McLaughlin Does Not Teach Away from the Claimed Invention is Not Based on Substantial Evidence***

To the extent that the PTAB relied on a desire to improve the *accuracy* of relay captioning as motivation to combine the references, the PTAB's decision must still be reversed because that determination likewise is not based on substantial evidence.

In finding a motivation to combine, the PTAB relies on the opinions of CaptionCall's expert (Appx7419-7421 (citing Appx8729, 8752-8753, Appx9419-9420)), who, for the reasons set forth above, is not a POSA and thus should not have been credited for understanding what motivation a POSA would have had. *See* Sec. IV.B.

Additionally, *McLaughlin* asserts that speech recognition software is too inaccurate for use in a telecommunications relay setting, and therefore teaches away from the claimed invention. In discussing the possibility of applying speech recognition to voicemail messages left for deaf persons, *McLaughlin* states that "acceptable speech recognition engines fail to recognize accented, slurred, non-standard, or even conversational speech." (Appx8145, 26:60-62). The PTAB acknowledged this disclosure, stating that *McLaughlin* "acknowledges the limitations of speech recognition software in recognizing certain kinds of speech, including conversational speech." (Appx7419). In view of this unambiguous



teaching, a POSA reading *McLaughlin* would be discouraged from using voice recognition software, such as the software allegedly disclosed in *Ryan*, to construct the claimed relay which would necessarily have to handle the sorts of accented, slurred and conversational speech that *McLaughlin* teaches speech recognition cannot handle. (See Appx7419, see also Appx8728, ¶ 21 (“In the more specific context of using speech recognition within a relay service for the hearing impaired, large vocabulary continuous speech recognition is desirable to provide fluid communication.”)).

The fact that *McLaughlin* would lead a POSA away from the solution of the claims establishes that the claims are non-obvious over the combination. See *In re Gurley*, 27 F.3d at 553. The inference is especially strong here because one of the reasons proffered to combine the references—to improve “the accuracy of a relay” (Appx7419)—is undermined by *McLaughlin*’s teaching that speech recognition fails to understand conversational speech. See *Depuy Spine, Inc. v. Medtronic Sofamor Danek*, 567 F.3d 1314, 1327 (Fed. Cir. 2009).

The PTAB attempts to sidestep *McLaughlin*’s negative characterization of speech recognition by advancing two arguments. Relying on Occhiogrosso, the PTAB asserts that a POSA would be aware that trained, speaker-dependent speech recognition performs better than speaker-independent speech recognition. (Appx7421 (citing Appx8729, Appx8752-8753, Appx9419-9420)). Additionally,

the PTAB argues that *McLaughlin* does not criticize *trained* speech recognition. (*Id.*).

These findings are insufficient to dismiss *McLaughlin*'s clear teaching against voice recognition because the PTAB failed to find that a POSA reading *McLaughlin* would conclude that speaker-dependent speech recognition was sufficient to be used in a relay setting, where the speech is conversational, and may be accented or slurred. (*See* Appx8145, 26:60-62). *McLaughlin* does not state that only "speaker independent" speech recognition "fail[s] to recognize ... conversational speech"; it refers to speech recognition *generally* as failing to be usable for conversational speech. (*Id.*). Additionally, while the PTAB finds that a POSA would be aware that speaker-dependent speech recognition is better, *McLaughlin* does not teach that it would be good enough to be used in a telecommunications relay, and the PTAB makes no such finding. In view of *McLaughlin*'s teaching that speech recognition generally would be unsuitable for use in a relay setting, a POSA would not attempt to construct a relay using speech recognition based on the teachings of *McLaughlin*. Because the PTAB relied on *McLaughlin* for this teaching in finding that the combination of *McLaughlin* and *Ryan* renders Claims 8-11 of the '578 Patent unpatentable, the Court should reverse this determination.

***VI.F.3. The PTAB's Findings that the Combination Would Not Change McLaughlin's Principle of Operation are Unsupported***

The PTAB also erred in finding that the combination of *Ryan* and *McLaughlin* would not change *McLaughlin*'s principle of operation. Combinations that change the "basic principles under which the [prior art] was designed to operate," may be non-obvious. *In re Ratti*, 270 F.2d at 813. Ultratec argued that *McLaughlin*'s principle of operation was the use of a conventional typed relay to effect voice-to-text transcription. (Appx7595). In the response, the PTAB stated that it was "not persuaded" because "McLaughlin focuses on a network configuration that uses simultaneous voice and data (SVD) modems in conjunction with a relay, not the details of how a relay translates voice to text during a call between a remote user and an assisted user." (Appx7420-7421). The PTAB's conclusions are not supported by substantial evidence and are too conclusory to be subject to proper review.

First, the PTAB fails to determine what *McLaughlin*'s principle of operation is or why it does not include the generation of text by typing, which is what is disclosed in the reference. As this Court has noted,

[T]he Board must articulate its reasoning for making its decision. The Board must develop and explain the basis for its findings. This enables the reviewing court to conduct meaningful review of the proceedings. Broad, conclusory statements are not enough to satisfy the Board's obligation to provide reasoned explanation for its decision.

*Cutsforth, Inc. v. MotivePower, Inc.*, 636 F. App'x 575, 578 (Fed. Cir. 2016). Here, the PTAB merely suggests, without explanation, that whatever *McLaughlin's* principle of operation is, it does not include the generation of text by typing. Because the PTAB has not supported its conclusion with substantial evidence, reversal is appropriate.

Second, there is a stark contrast between the PTAB's treatment of principle of operation here, where the PTAB appears to be focused broadly on *McLaughlin's* overall network structure and use of SVD modems, and its treatment of *Ryan's* principle of operation, where it takes the *opposite approach*. See Sec. VI.E.2. If the PTAB is correct here, that the inquiry involves looking at a reference's overall focus, its findings regarding *Ryan's* principle of operation are without substantial evidence.

**VI.G. The PTAB's Conclusions Regarding *Yamamoto* and *Wycherley* are Erroneous and Not Based on Substantial Evidence**

Claims 1-6 of the '482 Patent, Claims 7-11 of the '578 Patent, and Claim 1 of the '346 Patent expressly require that the CA listen to all the words of the assisted user and revoice those words using voice recognition software that is specifically trained to the voice of the particular CA. (See, e.g., Appx3694, 8:13-14, Appx7442, 10:17-21, Appx11236, 10:9-13). In addition, all of the remaining claims at issue in these consolidated appeals, with the exception of Claim 2 of the

‘346 Patent, also expressly require that the voice recognition software be trained to the voice of the CA.

While the PTAB found Claims 1-2 of the ‘314 Patent, Claims 1-15 of the ‘482 Patent, and Claim 7 of the ‘578 Patent invalid, over the combined teachings of *Wycherley* and *Yamamoto*—in some instances in combinations with other peripheral art (Appx57, Appx3666-3667, Appx7406)—the PTAB’s determination was not based on substantial evidence or sufficient analysis. First, the combination of *Yamamoto* and *Wycherley* relied on by the PTAB does not disclose the CA revoicing *all* of the words of the hearing user and there is no substantial evidence in the record to support a contrary finding (relevant to the PTAB’s findings on Claims 1-6 of the ‘482 Patent and Claim 7 of the ‘578 Patent). Second, the PTAB never articulated its reasoning in finding that the combination discloses the use of voice recognition software *trained to the voice of the call assistant* (relevant to the PTAB’s findings on Claims 1-2 of the ‘314 Patent, Claims 1-15 of the ‘482 Patent, and Claim 7 of the ‘578 Patent).

***VI.G.1. The Combination of Yamamoto and Wycherley Does Not Disclose the CA Revoicing All of the Words Spoken by the Hearing User***

As the PTAB noted, *Wycherley* discloses a relay system that applies automatic speech recognition based on voice templates for voices of *callers*, and in the event of excessive translation errors, provides a relay operator who *types* (not

revoices) a caller's responses. (Appx3637, Appx7390, *see also* Appx4315, Appx4321, 5:42-47). *Yamamoto* describes tests of voice recognition systems, including an operator-assistance system for international calling, in which an operator accesses a directory assistance system using verbal commands voiced to a voice recognition system. (*See* Appx3638, Appx7391, *see also* Appx4355). The combination asserted against the claims is *Wycherley's* system, modified such that the CA revoices the caller's words, rather than typing them, in the event that the automatic speech recognition operating on the caller's voice generates excessive errors. (Appx3639-3640 (describing the "intermediate re-voicing solution"), Appx7392-7393)).

The proposed combination does not disclose the CA revoicing everything the hearing user says, for two reasons. First, in the proposed combination at least some of the text is generated by the application of automatic speech recognition directly to the voice of the hearing caller; thus, by design, the proposed system would, at most, involve the CA revoicing only in the event of excessive errors. (Appx6696-6697, ¶ 36, Appx10611-10612, ¶ 52). The PTAB never addressed this argument, focusing instead on various references showing voice recognition programs capable of recognizing conversational speech. (*See* Appx3642-3645, Appx7394-7396). These observations, however, fail to provide substantial evidence underpinning the PTAB's conclusions of obviousness. Even assuming

the art taught programs capable of transcribing everything the hearing user says, this is not how the proposed combined device operates.

Additionally, while the PTAB found that in the *Yamamoto* directory assistance system “an operator repeats a caller’s question into a voice recognition unit,” the record evidence provides no support for that finding. (Appx7393, *see also* Appx3643-3648). The disclosure relied on by the PTAB and CaptionCall is: “What is being researched as a preliminary step is an operator assistance system, where there is voice recognition of an operator repeating the question from the user to reduce the time for accessing a database, targeting an increase in efficiency in the operations.” (Appx4355). CaptionCall’s expert, however, acknowledged that when *Yamamoto*’s operator was working with a caller, the operator would rephrase the caller’s question using terms the operator knew the system would recognize, rather than repeat the caller’s words verbatim. (Appx2753, 202:8-12, *see also* Appx2756, 205:2-5 (testifying that the *Yamamoto*’s operator would have to “get [the words spoken by the caller] down to words that they believe are -- recognized.”)). This recasting of the caller’s question in *Yamamoto* was necessary since *Yamamoto*’s system only recognized 1,600 words (Appx4355), which would make that system incapable of recognizing any random question that might have been posed the caller (Appx10341, 217:17-21 (agreeing that a 1,600 word vocabulary was “pretty small” and would not be effective for revoicing

conversational speech in a relay"')). Thus, *Yamamoto* does not disclose the *verbatim* revoicing required by the claims.

Moreover, in reaching its conclusion, the PTAB improperly ignored teachings from the references that discourage their combination. As this Court has warned, “[i]t is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.” *In re Hedges*, 783 F.2d 1038, 1041 (Fed. Cir. 1986) (internal quotation omitted). Here, *Wycherley*, considered as a whole, teaches away from *verbatim* revoicing. The goal of *Wycherley* is to use automation to *minimize utilization of relay call assistants*. (Appx4315 (“The desired result is achieved by automating particular features of dual party relay service to appreciably decrease the amount of time that a service attendant is involved in a dual party relay call.”)). *Wycherley*’s concern about minimizing CA involvement on a call would discourage modifying *Wycherley* to have the CA revoice everything said by the hearing user, and the claims cannot be obvious over such a modification. *In re Gurley*, 27 F.3d at 553.



***VI.G.2. The PTAB Failed to Explain Why Software “trained to the voice of the call assistant” Exists in the Prior Art Combination***

The challenged claims, with the exception of Claim 2 of the ‘346 Patent, expressly require voice recognition software “trained to the voice of the call assistant.” (See, e.g., Appx3694-3695, 8:14, 8:60-61, 9:24-25, 10:17-18, Appx7442, 9:23, 10:19-20, Appx84, 8:30-31, 8:48-49, Appx11236, 10:13). The PTAB did not find this element in either of the cited references; it is not there. It is undisputed that *Wycherley* does not disclose this limitation. (See, e.g., Appx3638-3639 (emphasizing that *Wycherley* discloses software programmed for the voice of the *caller*)). While CaptionCall’s expert “infers” the existence of trained voice recognition software in *Yamamoto* (see Appx7640, ¶ 23), the PTAB never adopted this finding. Instead, the PTAB found that software trained to the voice of the CA emerges in the proposed combination. (See Appx3641, Appx3644 (characterizing *Yamamoto*), Appx46-47, Appx7391-7396). The PTAB’s reasoning on this point is unexplained and conclusory.

The methodology employed by the PTAB in locating the “trained to the voice of the call assistant” limitation is the methodology rejected by this Court in *Cutsforth*, 636 F. App’x 575, 577. As in that case, the PTAB simply summarized CaptionCall’s position, rejects Ultratec’s position, and then states that it is “persuaded” by CaptionCall’s position. (See Appx3641). That is not enough.

“[T]he Board must articulate its reasoning for making its decision. The Board must develop and explain the basis for its findings. This enables the reviewing court to conduct meaningful review of the proceedings.” *Cutsforth, Inc.*, 636 F. App’x 575, 577. Here, the PTAB is required to explain *why* it was persuaded to adopt CaptionCall’s position.

A full explanation is particularly warranted here since the PTAB found that the POSA would have been motivated to create a *new element* not present in the art. (See Appx3641 (finding the element in the “proposed combination” but not in either reference), *see also* Appx7393, Appx46-47). Thus, this case is not a matter of “mixing and matching the teachings” of the references or of “predictably using” “known” or “familiar” elements in a new but obvious combination. (See Appx3642 (citing *KSR*, 550 U.S. at 418), Appx47 (same), Appx7393 (same)). Consistent with its past guidance, the Court should reverse in light of the PTAB’s failure to explain why the POSA would have created the missing voice recognition software trained to the voice of the CA.

#### **VI.H. The IPRs Deprive Ultratec of Its Constitutional Rights**

The IPRs at issue in these appeals deprive Ultratec of its constitutional rights to see the validity of the patents-at-issue adjudicated by a trial by jury in a court of the United States, with all of the due process protections associated with federal court litigation. In essence, the IPRs strip Ultratec of a \$44.1 million jury verdict

on the same patents-at-issue, achieved after extensive discovery and live exposition of evidence, and replace that verdict with an agency's decisions of unpatentability, reached after abbreviated discovery, truncated paper filings, and all of the problems listed above.

Under Supreme Court precedent, an issued patent “has become the property of the patentee, and as such is entitled to the same legal protection as other property.” *McCormick Harvesting Mach. Co. v. Aultman & Co.*, 169 U.S. 606, 609 (1898). Accordingly, “[t]he only authority competent to set a patent aside, or to annul it, or to correct it for any reason whatever, is vested in the courts of the United States, and not in the department which issued the patent.” *Id.*; *see also*, *e.g.*, *United States v. Am. Bell Tel. Co.*, 128 U.S. 315, 370 (1888) (“[The invention] has been taken from the people, from the public, and made the private property of the patentee ....”). For such private property rights, the Seventh Amendment guarantees the right to a jury trial. *See, e.g.*, *Granfinanciera, S.A. v. Nordberg*, 492 U.S. 33, 42 n.4 (1989).

IPRs, including those on appeal here, do not satisfy these requirements. IPRs are not conducted by federal courts, but by the PTAB, an administrative tribunal. 35 U.S.C. § 6(b)(4). IPRs do not provide for jury trials, but may include a hearing composed of attorney oral argument. *See* 37 C.F.R. § 42.70(a). IPRs

further restrict the amount and type of discovery allowed. *Compare* 37 C.F.R. § 42.51(b)(1); *id.* at § 42.51(b)(2); *id.* at § 42.52 with Fed. R. Civ. P. 26(b)(1).

IPRs also restrict the amount and type of exposition and argument. IPRs impose strict word counts and page limits and require all evidence to be submitted in exhibit form only. 37 C.F.R. §§ 42.24 & 42.63. IPRs do not allow for live testimony as a matter of course, 77 Fed. Reg. 48762, 48768, leaving the PTAB typically to make credibility determinations on paper alone. Finally, any evidence that the PTAB relies upon in determining patentability in an IPR is made public as a general rule, 77 Fed. Reg. 48761, discouraging the use of sensitive business information to prove nonobviousness.

The inadequacy of IPR procedures is highlighted by Ultratec's case. When Ultratec was allowed open discovery and allowed to present testimony live to a jury and cross-examine CaptionCall's witnesses, Ultratec prevailed on claims of infringement against CaptionCall and warded off CaptionCall's counterclaims of invalidity. *Ultratec, Inc. v Sorenson Commc'ns, Inc.*, No. 3:13-cv-00346, Dkt. 688 (W.D. Wis. Nov. 3, 2014) (all claims infringed and not invalid, awarding Ultratec \$44.1 million). As just one example, Ultratec uncovered internal CaptionCall documents that praised CapTel and discussed its features of revoicing and voice and revoiced text. *See id.*, Dkt. 730, at 23-27, 51-54, 70-73 (CaptionCall CEO, Pat

Nola, testifying to internal CaptionCall documents that discuss the features of CapTel, including “voice and text” and “re-voicing”).

Under the PTAB’s restrictive rules, the PTAB did not see or consider the internal CaptionCall documents discussed above in these underlying IPRs. Nor did the PTAB witness live testimony or cross-examination. In contrast to the two-week trial that the jury witnessed, the PTAB held oral arguments and allotted 45 minutes for each party to discuss IPR2013-00540, IPR2013-00541, and IPR2013-00545 and 45 minutes for each party to discuss IPR2013-00544, along with two other proceedings. (Appx286-287). To compound these shortcomings, the PTAB refused to even consider admitting CaptionCall’s expert’s contradictory testimony given in front of a jury regarding the same prior art references at issue in the IPRs. *See* Sec. VI.B.3.

For these reasons, the IPRs at issue in these appeals deprive Ultratec of its constitutional rights to see the validity of the patents-at-issue adjudicated by a trial by jury in a court of the United States, with all of the due process protections associated with federal court litigation, thus violating Article III of the Constitution and the Fifth and Seventh Amendments. Ultratec understands that the Court has foreclosed similar arguments in *MCM Portfolio LLC v. Hewlett-Packard*, 812 F.3d 1284 (Fed. Cir. 2015), which were also applied in *Cooper v. Lee*, No. 2015-1483, 2016-1071. However, the patentees in those cases have petitioned for *certiorari*,

raising issues with the Court's decisions. *MCM Portfolio*, No. 15-1330 (U.S. Apr. 29, 2016); *Cooper*, No. 15-955 (U.S. Jan. 21, 2016). Ultratec thus respectfully preserves these arguments, particularly in light of the jury verdict awaiting the outcome of these appeals.

## **VII. CONCLUSION AND STATEMENT OF RELIEF SOUGHT**

Based on the foregoing, Ultratec respectfully requests the Court reverse the PTAB's findings that the claims-at-issue in the '314, '482, '578 and '346 Patents are unpatentable.

## **VIII. ORAL ARGUMENT REQUEST**

Ultratec respectfully requests oral argument.

Dated: September 30, 2016

Respectfully submitted,

/s/ Anthony A. Tomaselli  
Anthony A. Tomaselli  
[anthony.tomaselli@quarles.com](mailto:anthony.tomaselli@quarles.com)  
Kristin Graham Noel  
[kristin.noel@quarles.com](mailto:kristin.noel@quarles.com)  
Martha Jahn Snyder  
[martha.snyder@quarles.com](mailto:martha.snyder@quarles.com)  
QUARLES & BRADY LLP  
33 East Main Street  
Suite 900  
Madison, Wisconsin 53703  
Tel. (608) 251.5000  
Fax (608) 251.9166

Michael J. Curley  
[michael.curley@quarles.com](mailto:michael.curley@quarles.com)  
QUARLES & BRADY LLP  
One South Church Avenue  
Suite 1700  
Tucson, Arizona 85701  
Tel. (520) 770.8700  
Fax (520) 623.2418

*Counsel for Appellant Ultratec, Inc.*

# **ADDENDUM**

[Trials@uspto.gov](mailto:Trials@uspto.gov)  
571-272-7822

Paper 78  
Entered: March 3, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CAPTIONCALL, L.L.C.,  
Petitioner,

v.

ULTRATEC, INC.,  
Patent Owner.

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Case IPR2013-00540  
Patent 6,233,314 B1

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Before WILLIAM V. SAINDON, BARBARA A. BENOIT, and  
LYNNE E. PETTIGREW, *Administrative Patent Judges*.

BENOIT, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*



IPR2013-00540  
Patent 6,233,314 B1

## I. INTRODUCTION

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6(c). This final written decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1 and 2 of U.S. Patent No. 6,233,314 B1 (Ex. 1021; “the ’314 patent”) are unpatentable.

### A. Procedural History

CaptionCall, L.L.C. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1 and 2 of the ’314 patent pursuant to 35 U.S.C. §§ 311-319. Paper 1 (“Pet.”). Patent Owner, Ultratec, Inc., did not file a preliminary response. On March 5, 2014, pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review for claims 1 and 2 of the ’314 patent on the following grounds of unpatentability: under 35 U.S.C. § 102(e) as anticipated by Ryan<sup>1</sup> and under 35 U.S.C. § 103(a) for obviousness over Wycherley<sup>2</sup> and Yamamoto.<sup>3</sup> Paper 8 (“Inst. Dec.”).

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 30; “PO Resp.”), and Petitioner filed a Reply (Paper 35; “Reply”). Patent Owner also filed Motions to Exclude Evidence. Paper 45

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<sup>1</sup> U.S. Patent No. 5,809,112 (Ex. 1004) (“Ryan”).

<sup>2</sup> U.S. Patent No. 5,163,081 (Ex. 1002) (“Wycherley”).

<sup>3</sup> Seiichi Yamamoto & Masanobu Fujioka, *New Applications of Voice Recognition*, Proc. IASJ Conf. (March 1996) (Ex. 1005). Unless indicated otherwise, all subsequent citations to Yamamoto refer to its English translation (Ex. 1006).

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(“PO Mot. to Exc. Occhiogrosso”); Paper 46 (“PO Mot. to Exc. Yamamoto”). Petitioner filed a combined Opposition (Paper 55; “Pet. Opp. to Mots. to Exc.”) to Patent Owner’s Motions, and Patent Owner filed a Reply to Petitioner’s Opposition (Paper 58; “PO Reply to Opp. to Mots. to Exc.”). Also, Petitioner filed a Motion for Leave to File Supplemental Evidence Regarding Yamamoto (Paper 52), and Patent Owner filed an Opposition to Petitioner’s Motion (Paper 57). In response to the Board’s order (Paper 63), Petitioner filed additional briefing (Paper 65) regarding the public availability of Yamamoto. In turn, Patent Owner filed a response (Paper 67), to which Petitioner filed a Reply (Paper 68).

An oral hearing was held on November 19, 2014.<sup>4</sup>

### *B. Related Proceedings*

Petitioner represents that the ’314 patent was asserted against its parent company in *Ultratec, Inc. v. Sorenson Communications, Inc.*, No. 13-CV-00346 (W.D. Wis.). Pet. 2. Petitioner also represents that in the same district court proceeding Patent Owner asserted the following patents at issue in *inter partes* reviews—U.S. Patent No. 5,909,482 (Case IPR2013-00541), U.S. Patent No. 7,319,740 (Case IPR2013-00542), U.S. Patent No. 7,555,104 (Case IPR2013-00543), U.S. Patent No. 8,213,578 (Case IPR2013-00544), U.S. Patent No. 6,594,346 (Case IPR2013-00545),

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<sup>4</sup> This proceeding, as well as IPR2013-00541, IPR2013-00542, IPR2013-00543, IPR2013-00544, IPR2013-00545, IPR2013-00549, and IPR2013-00550 involve the same parties and some similar issues. The oral arguments for all eight reviews were merged and conducted at the same time. A transcript of the oral hearing is included in the record as Paper 77.

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U.S. Patent No. 6,603,835 (Case IPR2013-00549), and U.S. Patent No. 7,003,082 (Case IPR2013-00550).

*C. The '314 Patent*

The '314 patent discusses a way to assist deaf, hard of hearing, or otherwise hearing impaired individuals to use telephones. Ex. 1021, 1:14-18. According to the '314 patent, conventional assistance uses a device having a keyboard and display, which may be called a text telephone (TT), a teletype (TTY), or a telecommunication device for the deaf (TDD). *Id.* at 1:26-29. A human intermediary facilitates communication between a hearing user and a hearing impaired user by communicating by voice with the hearing user and using a TDD to communicate with the hearing impaired user. *Id.* at 1:61-65. The system of voice-to-TDD communication used by the human intermediary (called an operator or call assistant) is referred to as a relay. *Id.*

The '314 patent indicates the effectiveness of relay systems is limited by the speed at which a call assistant can type the words said by the hearing user. *Id.* at 2: 9-22. The '314 patent relates to a relay system to improve performance of voice-to-text interpretation for translating between hearing impaired and hearing users. *Id.* at 3:13-16. Instead of typing the hearing user's words, the call assistant speaks those words into a microphone that transmits the voice of the call assistant to a computer with voice recognition software that is trained to the voice of the call assistant. *Id.* at 5:27-46. The computer translates the words of the call assistant to digital text, which is sent to a display of the hearing impaired user. *Id.* at 5:49-64.

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*D. Illustrative Claim*

Petitioner challenges both claims of the '314 patent. Claims 1 and 2 are independent claims. Claim 2 is illustrative of the claims at issue and reads as follows:

2. A relay to facilitate communication between a digital telecommunication device and a hearing person through a telephone system and using a call assistant, the relay comprising

a speaker connected to receive voice communications from the telephone system and transmit those voice communications to the ear of the call assistant;

a microphone connected to pickup voice spoken by the call assistant;

a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream; and

a modem connected to the digital computer to transit the digital text stream created by the computer over the telephone system to the telecommunication device.

*Id.* at 8:37-53.

II. ANALYSIS

*A. Claim Construction*

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, No. 2014-1301, slip op. at 11–19 (Fed. Cir. Feb. 4, 2015). Under the broadest reasonable construction standard, claim terms are

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presumed to be given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An inventor may provide a meaning for a term that is different from its ordinary meaning by defining the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

We construe “the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream,” recited in claims 1 and 2, in accordance with these principles. No other claim terms require express construction.

*1. “trained to the voice of the call assistant”*

Neither party expressly proposes a construction for “trained to the voice of the call assistant.” *See* Pet. 6-7; PO Resp. 8-12; Reply 2. In their dispute over the teachings of the asserted prior art, however, the parties articulate different views on how the term should be construed. Patent Owner construes “trained to the voice of the call assistant” to require training to recognize individual voices (PO Resp. 27-28), presumably trained to the voice of one and only one call assistant and precluding training for a type of speech used by a group of people (such as a regional accent) that could apply to more than one call assistant. Patent Owner also seeks to construe “trained to the voice of the call assistant” as having a temporal constraint so as to preclude training at the time when the voice recognition

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computer software package is “*designed* in advance of implementation at the source code level.” PO Resp. 26. According to Patent Owner, “trained to the voice of the call assistant” precludes software that is “built to” recognize the voice of a particular agent. PO Resp. 27. Petitioner disagrees. Reply 5.

The Specification of the ’314 patent does not set forth a special definition for “training.” The Specification, however, in its “Brief Summary of the Invention,” indicates “a speech recognition computer program which has been trained to the voice *pattern* of the call assistant.” Ex. 1021, 2:45-48 (emphasis added). In the context of describing the relay shown in Figure 1, the Specification describes “the call assistant operat[ing] at a computer terminal which contains a copy of a voice recognition software package which is specifically trained to the voice of that *particular* call assistant.” *Id.* at 5:45-48 (emphasis added). The Specification, however, does not indicate expressly that the voice recognition software is trained to the voice of only that particular call assistant or otherwise indicate the voice recognition software is trained for the voice of only one call assistant.

As such, the Specification contemplates software trained to “a voice pattern of the call assistant” as well as software “specifically trained to the voice of [a] particular call assistant.” Further, the Specification indicates, in those passages, that the voice recognition software package is trained but does not indicate when or how the training occurs. *Id.* at 2:45-48, 5:45-48. Patent Owner, relying on its declarant Mr. Paul W. Ludwick, asserts software “designed” is not software that is “trained to recognize individual voices.” PO Resp. 26. According to Mr. Ludwick, a person of ordinary skill in the art would not have understood “trained” software to include

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“designed” software because technology to train software to recognize individual voices did not exist in 1994 and was not used in telecommunications relay service at that time. PO Resp. 26 (citing Ex. 2010 ¶¶ 21-22). We also note here that the technology available in 1994 has little probative value here because the year of invention is 1997, for the reasons discussed below.

We give claim language its broadest reasonable construction in light of the specification of the patent in which it appears. Thus, we will not limit “trained to the voice of the call assistant” to require training to the voice of only one particular call assistant, because the claim language encompasses the invention as disclosed in the Specification—software trained to a voice *pattern* of a call assistant. Ex. 1021, 2:41-49 (“Summary of the Invention”). Nor will we limit “trained to the voice of the call assistant” to a particular time in which the training must occur or to a particular manner of training that is not found in the claims nor the Specification.

Accordingly, “trained to the voice of the call assistant” does not preclude voice recognition software that is designed or built in advance of implementation at the source code level to the voice pattern of a call assistant. Nor is “trained to the voice of the call assistant” limited to training to the voice of one and only one call assistant.

2. *“computer programmed to use a voice recognition computer software package trained to the voice of the call assistant”*

Neither party expressly proposes a construction for “computer programmed to use a voice recognition computer software package trained to the voice of the call assistant.” *See* Pet. 6-7; PO Resp. 8-12; Reply 2. In

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the dispute over the teachings of the asserted prior art references, however, Patent Owner contends, based on the testimony of Mr. Ludwick, that the claimed voice recognition software must be “running on the call assistant’s workstation—e.g., not remotely or virtually running on or from a server or other computer.” PO Resp. 25 (citing Ex. 2010 ¶¶ 59-62).

Mr. Ludwick explains that, because the claim requires the call assistant to speak into a microphone connected to the computer programmed to use a voice recognition computer software package and because of advantages of such an arrangement, the claimed software package must reside on the claimed computer to which the microphone is connected. Ex. 2010 ¶¶ 60-62; *see also* PO Resp. 25.

Claims 1 and 2, however, require the computer “to *use* a voice recognition computer software package” and do not require expressly the voice recognition computer software package to be stored on the computer programmed to use the software package. Patent Owner, based on Mr. Ludwick’s testimony, acknowledges the software package may be stored other than on the call assistant’s computer. PO Resp. 25 (indicating a terminal may be able to transmit a voice signal to be converted to text by a server or other computer located remotely from the call assistant’s computer) (citing Ex. 2010 ¶¶ 63-64). Notably, neither Patent Owner nor Mr. Ludwick addresses sufficiently how a person of ordinary skill in the art would understand the limitation “the computer programmed *to use*” a software package to require the software package to be stored on the computer programmed to use the software package.



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Thus, we will not construe “computer programmed to use a voice recognition computer software package trained to the voice of the call assistant” as requiring the software package to be stored on the computer programmed to use the software.

*B. Principles of Law*

To prevail in challenging claims 1 and 2 of the ’314 patent, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

A claim is anticipated if a single prior art reference either expressly or inherently discloses every limitation of the claim. *Orion IP, LLC v. Hyundai Motor Am.*, 605 F.3d 967, 975 (Fed. Cir. 2010). To establish inherent disclosure, the evidence must show that a feature is necessarily described in the reference. *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999). To anticipate, a reference also “must enable one of ordinary skill in the art to make the invention without undue experimentation.” *Impax Labs., Inc. v. Aventis Pharm., Inc.*, 545 F.3d 1312, 1314 (Fed. Cir. 2008). To determine whether “undue experimentation” is required, various factors are examined, including (1) the quantity of experimentation; (2) the amount of direction or guidance present; (3) the presence or absence of working examples; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of those in the art; (7) the predictability or unpredictability of the art; and (8) the breadth of the claims. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988); *see also Impax Labs.*, 545 F.3d at 1314-15 (indicating the Wands factors

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should be applied to a determination whether a prior art reference is enabled).

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time of the invention to a person having ordinary skill in the art. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). The level of ordinary skill in the art is reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

*C. Patent Owner's Motion to Exclude Testimony by Mr. Occhiogrosso*

Patent Owner seeks to exclude the testimony of Mr. Benedict Occhiogrosso (Exs. 1014, 1053, 2006, 2007, and 2016) on the theory that he is not qualified as an expert under Federal Rule of Evidence 702 ("FRE 702").<sup>5,6</sup> PO Mot. to Exc. Occhiogrosso; PO Resp. 4-8. FRE 702

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<sup>5</sup> Patent Owner also seeks to *exclude* Mr. Occhiogrosso's testimony under 37 C.F.R. § 42.65. PO Mot. to Exc. Occhiogrosso 1. Rule 42.65, however, addresses (a) the weight given to expert testimony that does not disclose underlying facts or data on which the opinion is based, (b) the showing required if a party seeks to rely on a technical test or data from such a test,

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provides that a witness qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion if (a) the expert's knowledge will help the trier of fact to understand the evidence or to determine a fact in issue, (b) the testimony is based upon sufficient facts or data, (c) the testimony is the product of reliable principles and methods, and (d) the witness has applied the principles and methods reliably to the facts of the case.

Testimony on the issue of unpatentability proffered by a witness who is not "qualified in the pertinent art" generally is not admissible under FRE 702. *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1363–64 (Fed. Cir. 2008). In determining who is qualified in the pertinent art under FRE 702, we need not find a complete overlap between the witness's technical qualifications and the problem confronting the inventor or the field of endeavor. *See SEB S.A. v. Montgomery Ward & Co., Inc.*, 594 F.3d 1360, 1372–73 (Fed. Cir. 2010) (upholding admission of the testimony of an expert who admittedly lacked expertise in the design of the patented invention, but had experience with materials selected for use in the invention); *Mytee Prods., Inc. v. Harris Research, Inc.*, 439 Fed. App'x 882, 886–87 (Fed. Cir. 2011) (non-precedential) (upholding admission of the testimony of an expert who "had experience relevant to the field of the

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and (c) the exclusion of expert testimony on United States patent law or patent examination practice. As such, Rule 42.65 does not apply to a determination whether to exclude Mr. Occhiogrosso's testimony.

<sup>6</sup> With some enumerated exceptions, the Federal Rules of Evidence apply to an *inter partes* review. 37 C.F.R. § 42.62.

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invention,” despite admission that he was not a person of ordinary skill in the art).

Patent Owner contends that, to qualify as an expert under FRE 702, Mr. Occhiogrosso must be a person of ordinary skill in the art, and that Mr. Occhiogrosso is not a person of ordinary skill in the art because “he is an information technology (“IT”) generalist” and does not have “any specific experience in the context of [telecommunications relay systems] for the deaf and the HOH [hear of hearing].” PO Mot. to Exc. Occhiogrosso 5; *see also id.* at 1-4 (discussing the definition of a person of ordinary skill in the art); 5-7 (discussing Mr. Occhiogrosso’s experience with respect to these factors). Petitioner responds that Patent Owner’s definition of the level of ordinary skill in the art conflates a requirement for skill in the relevant technical art (“telecommunications systems [having] voice-to-text transcription”) with skill in one particular commercial sector that applies that technical art (“telecommunications services *specifically* designed for the deaf or hard of hearing”). Pet. Opp. to Mots. Exc. 1, 3-4.

Patent Owner’s arguments are unpersuasive at the outset because, to testify as an expert under FRE 702, a person need not be a person of ordinary skill in the art, but rather “qualified in the pertinent art.” *Sundance*, 550 F.3d at 1363-64; *SEB*, 594 F.3d at 1372-73; *Mytee*, 439 Fed. App’x at 886-87. Patent Owner’s arguments are also unpersuasive because they attempt to constrict the “pertinent art,” i.e., the pertinent technology, to a particular subset of individuals who use the pertinent technology, rather than the pertinent technology itself. *See* Pet. Opp. to Mots. to Exc. 4-5 (arguing

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that the problems in the pertinent art are not “uniquely related” to the deaf and hard-of-hearing).

Moreover, Patent Owner indicates elsewhere that the relevant field of art is telecommunication technologies. *See* PO Resp. 18 n.2 (Patent Owner indicating its declarant “Mr. Ludwick indisputably is [a person of ordinary skill in the art] in telecommunications technologies, which is the relevant field of art” to opine on speech recognition software for use in telecommunication relay service settings). Petitioner similarly indicates the relevant field is telecommunication technologies. Pet. Opp. to Mots. to Exc. 6 (“Mr. Occhiogrosso’s qualifications should be analyzed with respect to the pertinent art of telecommunication technologies in which an intermediary facilitates voice-to-text transcription.”).

We agree that the pertinent art is telecommunication technologies. The ’314 patent states that the “present invention relates to the general field of telephone communications.” Ex. 1021, 1:14-15. The ’314 patent focuses on a particular application of that technology: people who need assistance in using telecommunications devices. *Id.* at 1:15-2:9 (describing various prior art assistive technologies). The ’314 patent also summarizes the invention as the use of a speech recognition computer program trained to the voice of the call assistant to translate promptly the words spoken by an intermediary call assistant into a “high speed digital communication message [that] is then transmitted electronically promptly by telephone to a visual display accessible to the” hearing-assisted user. *Id.* at 2:41–52.

The qualifications of Mr. Occhiogrosso, as summarized in his curriculum vitae (Ex. 1015), qualify him to give expert testimony on the

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subject of telecommunication technologies. He possesses a Bachelor of Science in Electrical Engineering and a Master of Science in Electrical Engineering. Ex. 1015, 2. Mr. Occhiogrosso testifies that he has more than thirty years of experience in the field of telecommunications and information technology, and he has planned, designed, implemented, and managed large scale projects involving wired and wireless communication systems, including transmission of voice and data. Ex. 1014 ¶ 7; *see also* Ex. 1015, 2-6 (detailing Mr. Occhiogrosso's enterprise consulting engagements, research and development, and wireless experience).

Moreover, to the extent Mr. Occhiogrosso is more familiar with general telecommunications technology and less familiar with voice-to-text or its application to the deaf or hearing-impaired, or to the extent that Mr. Occhiogrosso's testimony is inconsistent or unsupported, we weigh Mr. Occhiogrosso's testimony accordingly, taking into account the extent of his expertise in these areas. *See, e.g., Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) (holding the Board has discretion to give more weight to one item of evidence over another "unless no reasonable trier of fact could have done so"); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) ("[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.").

Patent Owner also contends that Mr. Occhiogrosso's testimony fails to identify the level of skill in the art in his declaration (Ex. 1014), fails to give any consideration to what one of ordinary skill in the art would have known or not known, is unsupported and unreliable, and does not consider

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secondary considerations. PO Mot. to Exc. Occhiogrosso 8-9; PO Resp. 7-8; PO Reply to Opp. to Mots. to Exc. 3. Petitioner counters that Mr. Occhiogrosso “consistently applied his definition of a [person of ordinary skill in the art] throughout his testimony” and, in a supplemental declaration, Mr. Occhiogrosso “made explicit the level of ordinary skill he applied” in Exhibit 1014. Pet. Opp. to Mots. to Exc. 11-12.

Patent Owner’s argument goes more to the weight we should accord Mr. Occhiogrosso’s testimony, rather than its admissibility. It is within our discretion to assign the appropriate weight to the testimony offered by Mr. Occhiogrosso. *See, e.g., Yorkey*, 601 F.3d at 1284. Moreover, Mr. Occhiogrosso provided a supplemental declaration identifying the level of skill in the art and confirming his opinion presented in the earlier declaration (Ex. 1014) in view of the level of skill in the art. *See* Ex. 1053 ¶¶ 12-17, 19. Mr. Occhiogrosso testimony also confirmed his legal understanding of anticipation and obviousness, including secondary considerations. *See* Ex. 1053 ¶¶ 20-26.

Under the totality of these circumstances, we decline to exclude the testimony of Mr. Occhiogrosso. Accordingly, Patent Owner’s Motion to Exclude to Mr. Occhiogrosso’s testimony (Paper 45) is *denied*.

#### *D. Anticipation by Ryan*

Petitioner asserts that claims 1 and 2 of the ’314 patent are unpatentable under 35 U.S.C. § 102(e) as anticipated by Ryan. Pet. 11, 13-19. Patent Owner challenges Petitioner’s assertion. PO Resp. 15-37.

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### 1. Summary of Ryan

Ryan discloses a telecommunications relay system with a relay interface for communicating between a standard telephone set and a TDD for a hearing impaired person. Ex. 1004, Abstract. Figure 1 of Ryan is a diagram of the telecommunications relay system and is set forth below:

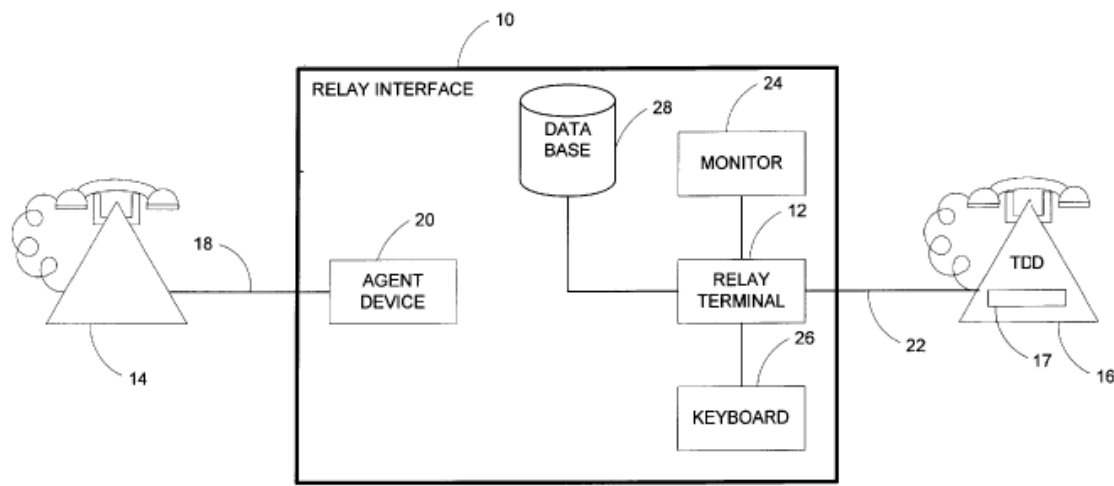


FIG. 1

As shown in Figure 1, Ryan's telecommunications relay interface 10 includes operator/relay terminal 12 and couples standard telephone 14 with TDD 16. Ex. 1004, 3:34-35, 43-51. An operator or relay agent typically is responsible for manipulating relay terminal 12 to relay messages between telephone 14 and TDD 16. Ryan indicates, however, that speech recognition software could be used to automate the relay function so that an operator or relay agent would not be required. *Id.* at 4:19-24. Ryan specifically describes using speech recognition software at agent device 20 to interpret a voice message from a caller at telephone 14 and convert the message from a voice format to a data format. *Id.* at 4:24-27. Ryan further indicates:



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If the software is specifically designed to recognize the voice of particular relay agents, the accuracy of the relay service may be improved by having one of these agents listen to the caller and repeat the voice message into a terminal adapted to convert the agent's voice message into a data message.

*Id.* at 4:33-38.

## *2. Ryan Is Prior Art*

Ryan issued on September 15, 1998, with a filing date of July 3, 1996, and is entitled to the benefit of the filing date of its parent application, October 18, 1994. Ex. 1004. Thus, Petitioner contends Ryan is prior art to the claims of the '314 patent under 35 U.S.C. § 102(e). Pet. 11. Patent Owner contends that Ryan is not prior art under § 102(e) because it is not enabled. PO Resp. 15-24.

Under § 102(e), Ryan must be enabled prior to the date of invention of the '314 patent. *See* 35 U.S.C. § 102 (Section 102 indicates that “[a] person shall be entitled to a patent unless— . . . (e) the invention was described in . . . (2) a patent granted on an application for patent . . . filed in the United States before the invention by the applicant for patent.”). The '314 patent issued from an application filed on April 8, 1999, which was a continuation of an application filed on September 8, 1997. Accordingly, the earliest possible date of invention of the claims of the '314 patent is presumed to be September 8, 1997.

As an initial matter, we address Patent Owner's assertion of an earlier date of invention for the claims—June 23, 1997. *See* PO Resp. 23-24. Patent Owner relies on a journal entry from August 5, 1997 indicating “the [call assistant] repeats what voice person says” (Ex. 2011 ¶¶ 3-4) and two

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declarations regarding the purchase of commercial software (i.e., IBM ViaVoice). Ex. 2012 ¶¶ 5-10; Ex. 2013 ¶¶ 7-9. The declarations indicate that IBM ViaVoice was released in August 1997 and the patent application was filed shortly thereafter on September 8, 1997. Ex. 2012 ¶¶ 5-10; Ex. 2013 ¶¶ 7-9.

Patent Owner's earliest proffered evidence dates back only to August 5, 1997, not to June 23, 1997. Ex. 2011 ¶¶ 3-4. Moreover, Patent Owner has not attempted to show diligence in reduction to practice.<sup>7</sup> Thus, we do not find that Patent Owner has established a date of invention for the claims prior to September 8, 1997.

We now turn to whether the portion of Ryan relied on by Petitioner as disclosing the recited “digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream” was enabled prior to the relevant time. Initially, there is a presumption that a prior art reference is enabled. *See In re Antor Media*, 689 F.3d 1282, 1287–1288 (Fed. Cir. 2012); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1355 (Fed. Cir. 2003).

The parties agree that commercial voice recognition software available from Dragon Systems, called “Naturally Speaking” (and

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<sup>7</sup> *See Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1577 (Fed. Cir. 1996) (holding that the first to conceive “may date his patentable invention back to the time of its conception, if he connects the conception with its reduction to practice by reasonable diligence on his part, so that they are substantially one continuous act” (internal citation and quotations omitted)).

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sometimes referred to as “Dragon Naturally Speaking”), enabled “a digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream.” PO Resp. 23 (citing Exs. 2011, 2012, and 2013); Reply 4. There is no dispute that Dragon Naturally Speaking was available to the public on June 23, 1997. PO Resp. 23 (citing Exs. 2011, 2012, and 2013); Reply 4. Further, the ’314 patent and its parent indicate Dragon Naturally Speaking was available commercially. Ex. 1021, 5:50-57 (stating “a recently available commercial voice recognition package from Dragon Systems, known as ‘Naturally Speaking,’ is a voice recognition software which will . . . translate to digital text spoken words of a user at the normal speeds of human communication in conversation when operating on conventional modern personal computers”); *see also* Ex. 1021, 5:50-57 (stating the same).

Weighing the *Wands* factors, we determine that at least the state of the prior art (including commercial availability of Dragon Naturally Speaking), the breadth of the claims (“a digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream”), and the predictability of the telecommunications art support a finding that Ryan is enabled as of June 23, 1997. *See Wands*, 858 F.2d at 737.

Patent Owner argues that Ryan does not anticipate the claims of the ’314 patent under § 102(e) because Ryan’s disclosure of speech recognition software (Ex. 1004, 4:19-38) was not enabled in 1994, the earliest effective

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filing date claimed by Ryan. PO Resp. 15-22. We do not agree with Patent Owner that, to anticipate under 35 U.S.C. §102(e), a reference must be enabled as of the date of the reference's earliest claimed priority date.

*Id.* at 15-22. First, “[e]nablement of an anticipatory reference may be demonstrated by a later reference.” *Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1379 (Fed. Cir. 2001). An anticipatory reference under § 102(b) is enabled if it can be shown that the claimed subject matter was in possession of the public before the critical date of the challenged patent. *Id.* Based on well-established law that to anticipate under § 102(b) a reference must be enabled by the critical date, not by the publication date of the reference asserted as prior art, we conclude that to anticipate under § 102(e) a reference must be enabled by the date of invention of the challenged claim. As determined previously, Ryan is enabled by commercial software available to the public on June 23, 1997, which precedes the earliest date of invention for the '314 patent. Thus, Ryan is prior art to the claims of the '314 patent. *See* 35 U.S.C. 102(e) (precluding a patent if the invention of the patent was described in “a patent granted on an application for patent . . . filed in the United States before the invention”).

Second, we are not persuaded by Patent Owner's arguments citing cases concerning (i) the written description requirement of 35 U.S.C. § 112, *In re Wertheim*, 646 F.2d 527 (CCPA 1981), and (ii) the problem of “secret prior art,” *Alexander Milburn Co. v. Davis-Bournonville Co.*, 270 U.S. 390 (1926). Patent law now recognizes “secret prior art” in section 102(e), and the Federal Circuit has observed that “[e]ven the ‘secret prior art’ of § 102(e) is ultimately public in the form of an issued patent before it attains prior art

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status.” *OddzOn Prods., Inc. v. Just Toys, Inc.*, 122 F.3d 1396, 1402 (Fed. Cir. 1997). Further, it is well-settled that the enablement requirement is a separate requirement from the written description requirement. *See, e.g., Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010); *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563 (Fed. Cir. 1991). Moreover, “[t]he enablement requirement is often more indulgent than the written description requirement. The specification need not teach explicitly those in the art to make and use the invention; the requirement is satisfied if, given what they already know, the specification teaches those in the art enough that they can make and use the invention without ‘undue experimentation.’” *Amgen*, 314 F.3d at 1334.

Finally, we are not persuaded by Mr. Ludwick’s testimony addressing the inability of technology in 1994 to implement speech recognition technology that kept up with conversation. Resp. 19 (citing Ex. 2010 ¶¶ 25-28). For the reasons discussed previously, Ryan does not need to be enabled as of 1994 to qualify as prior art to the claims of the ’314 patent. Further, we note the language used to describe transcription speeds used in the written description of the ’314 patent—transcription speeds “which will translate to digital text spoken words of a user at the normal speeds of human communication in conversation” (Ex. 1021, 5:54-56)—is not included in claims, which merely recite “the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream.”

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For these reasons, Ryan need not be enabled as of 1994 to qualify as prior art to claims 1 and 2 of the '314 patent. We have determined that Ryan was enabled as of June 1997 and, therefore, qualifies as prior art to claims 1 and 2.

### *3. Analysis of Claims 1 and 2*

To support its contention that Ryan anticipates claims 1 and 2, Petitioner relies on analysis as to how each claim limitation is disclosed by Ryan and also relies on declaration testimony by Mr. Occhiogrosso. Pet. 11, 13-19 (citing Ex. 1014). Patent Owner responds, relying on declaration testimony by Mr. Ludwick and others. PO Resp. 24-37 (citing Exs. 2010-2013). Having considered the parties' contentions and supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that Ryan discloses, either expressly or inherently, each limitation of claims 1 and 2, and so anticipates claims 1 and 2, for the reasons set forth below.

In particular, Petitioner acknowledges that Ryan does not disclose expressly "a speaker" or "a digital computer connected to a microphone," as recited in claims 1 and 2. Pet. 14-15, 17-18. Petitioner, however, asserts that Ryan inherently discloses those components. Pet. 14-15 (citing Ex. 1014 ¶¶ 28-30), 17-18 (citing Ex. 1014 ¶¶ 28-30). We credit Mr. Occhiogrosso's explanation that a speaker necessarily must be present in Ryan's relay system for a relay agent to "listen to the caller," as Ryan expressly discloses. Ex. 1014 ¶ 30 (citing Ex. 1004, 4, l. 36). Also, we credit Mr. Occhiogrosso's testimony that the recited "a digital computer

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connected to a microphone” necessarily must be present in Ryan’s relay system for it to process the voice of the relay operator, and a digital computer necessarily must be present for Ryan’s relay system to use speech recognition software. Ex. 1014 ¶¶ 28-29 (citing Ex. 1004, 4:14, 33). Thus, we find that Ryan inherently discloses the recited “a digital computer connected to a microphone” and “a speaker.”

We also find that Ryan expressly discloses the recited modem in describing “a personal computer with communications software and a modem.” Ex. 1004, 1:29-31; *see also* Pet. 16, 19 (citing Ex. 1004, 1:29-31, 53-59; 7:66-8:10).

A central dispute between the parties is whether Ryan discloses “a digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream,” as recited in claims 1 and 2. *Compare* Pet. 15-16, 18-19 *with* PO Resp. 24-37.

Petitioner contends this limitation is disclosed by Ryan’s relay interface system in which a relay agent is responsible for relaying messages between phone 14 and TDD 16. Pet. 18 (citing Ex. 1004, 4:19-38). We agree with Petitioner that Ryan’s description of “speech recognition software . . . employed at [relay agent] device 20 [and] specifically designed to recognize the voice of particular relay agents” discloses the recited “digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant.” *See* Pet. 15 (citing Ex. 1004, 4:24-34). We also agree that Ryan’s indication that “if the software is specifically designed to recognize the voice of particular relay agents, the

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accuracy of the relay service may be improved by having one of these agents listen to the caller and repeat the voice message into a terminal adapted to convert the agent's voice message into a data message” discloses “the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream.” *See* Pet. 15 (citing Ex. 1004, 4:33-38) (emphasis omitted).

Patent Owner responds with several arguments that Ryan does not disclose the recited digital computer, none of which we find persuasive. *See* PO Resp. 24-37. Undergirding some of Patent Owner’s contentions is the state of the art of voice recognition technology in 1994. *See* PO Resp. 26 (“[S]peech recognition was not actually used at all in the [telecommunications relay service] field in 1994”); PO Resp. 36-37 (asserting Ryan must be read narrowly in view of the state of the art of telecommunications relay service art in 1994); Ex. 2010 ¶¶ 24-30 (Mr. Ludwick submitting that Ryan does not contain an enabling disclosure of the recited digital computer based on technology available in 1994). The state of the art of the relevant technology in 1994, however, has limited probative value. Rather, the state of the art of the relevant technology in September 1997, the date of invention of the subject matter claimed in the ’314 patent, is of greater significance. *See* 35 U.S.C. § 102(e) (finding subject matter unpatentable if the “the invention was described in [a reference] *before the invention*”) (emphasis added). As noted previously, there is no dispute about the state of voice recognition technology as of June 23, 1997, when Dragon Naturally Speaking was released.



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Patent Owner contends that Ryan does not disclose the recited digital computer because the claims require voice recognition software to be running or stored on the call assistant's workstation. PO Resp. 25. As discussed above, we disagree with Patent Owner's implicit construction of "the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream." For the reasons noted above, we do not construe the limitation to require the voice recognition computer software package to be stored on the computer programmed to use the software package. Thus, we do not agree with Patent Owner's argument because it is not commensurate in scope with the claims.

Moreover, contrary to Patent Owner's contentions, we find Ryan discloses voice recognition software at the location of the call assistant. Ryan indicates "speech recognition software could be employed at device 20," which is included in Ryan's telecommunications relay interface system 10 used by the relay agent. Ex. 1004, 4:24-26; *see also id.* Fig. 1 (showing agent device 20 within telecommunications relay interface system 10). Ryan goes on to state "[i]f the software is specifically designed to recognize the voice of particular relay agents, the accuracy of the relay service may be improved by having one of these agents listen to the caller and repeat the voice message into a terminal adapted to convert the agent's voice message into a data message." *Id.* at 4:33-38. We do not agree with Patent Owner's assertion that, because Ryan indicates "a terminal" (rather than expressly identifying a particular component shown in Figure 1),

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Ryan's voice recognition software could be located other than on the agent's workstation.

Also, Patent Owner contends that Ryan does not disclose the recited "voice recognition software trained to the voice of the call assistant" because Ryan's software is not trained as required by Patent Owner's interpretation of the required training. Rather, according to Patent Owner, Ryan discloses voice recognition software that is "designed," which means the software is designed in advance of implementation at the source code level and, therefore, the software is not trained. PO Resp. 25-26.

For the reasons noted previously, we do not agree the recited trained voice recognition software precludes training during software design, which Patent Owner acknowledges is disclosed by Ryan. *Id.* at 26-27. Thus, we do not agree with Patent Owner's argument because it is not commensurate in scope with the claims.

Moreover, Patent Owner relies on Mr. Ludwick's testimony asserting Ryan does not teach "voice recognition computer software trained to the voice of the call assistant." PO Resp. 25-27 (citing Ex. 2010 ¶¶ 21-22). We do not find Mr. Ludwick's testimony that Ryan's voice recognition software is "designed to recognize the voice of particular relay agents" to be persuasive because Mr. Ludwick grounded his testimony in the state of the art in 1994, when the date of invention is 1997. *See* Ex. 2010 ¶ 21 (referring to the telecommunications relay service field in 1994), ¶ 22 (noting the needed technology "did not then exist").

Next, Patent Owner, relying on Mr. Ludwick's testimony, contends that Ryan does not disclose the recited "voice recognition software trained to

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the voice of the call assistant,” because Ryan’s “voice recognition software is written specifically to recognize the voices of a collection or group of people, rather than a particular, individual call assistant.” PO Resp. 27-28 (citing Ex. 2010 ¶ 22).

For the reasons noted previously, we do not agree that the claims are limited to voice recognition software trained to one and only one call assistant. Thus, we do not agree with Patent Owner’s argument because it is not commensurate in scope with the claims.

Moreover, we are not persuaded by Patent Owner that a person of ordinary skill in the art would interpret Ryan as only disclosing software written specifically for a group of people (PO Resp. 28). Patent Owner’s argument is unpersuasive because it relies on the level of ordinary skill in the art as reflected in a prior art patent filed in 1994, when the invention date of the challenged claims is September 1997. *See* PO Resp. 28 (citing Ex. 2008, U.S. Patent No. 5,553,119 (“McAllister”) filed on July 7, 1994).

Patent Owner also contends that, at most, Ryan is ambiguous as to the disclosure of a call agent translating the words spoken in voice by the call assistant into a digital text stream, and so does not anticipate claims 1 and 2. PO Resp. 29-37. Patent Owner contends, based on the goals of Ryan to correct errors before displaying words and the context of the passage, that Ryan discloses a relay agent using “revoicing” as an error correction mechanism for individual, unrecognized letters of a word. PO Resp. 32-35; *see* Ex. 1004, Abstract, 4:19-38.

Ryan’s technology is intended to “overcome[] the problem associated with existing telecommunications relay services by providing a system and

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method for correcting mistakes before the message is displayed at the end user's TDD" (i.e., telecommunications device for the deaf). Ex. 1004, 2:35-38 ("Summary of the Invention"). In the above-quoted passage, Ryan describes ways to do so using speech recognition software. One way is automating the relay function so as to eliminate the need for a human operator. *Id.* at 4:19-24. To do so, Ryan describes using speech recognition software to convert the voice message from a caller to text "while providing an error correction feature for words not recognized by the software." *Id.* at 4:24-28. Ryan further describes the error correction feature as having two forms—phonetic spelling of the unrecognized word by the speech recognition software or prompting the caller to spell the unrecognized word. *Id.* at 4:29-33. Ryan describes, in the passage, another way to improve the accuracy of a relay system before the text is displayed at the TDD—if the speech recognition software is designed specifically to recognize the voice of particular relay agents, a relay agent "listen[s] to the caller and repeat[s] the voice message into a terminal adapted to convert the agent's voice message into a data message." *Id.* at 4:33-38.

In contrast to Ryan's description of the error correction by the *caller* spelling letters of an unrecognized word, here Ryan unambiguously describes a relay agent repeating the voice message of the caller and having speech recognition software, designed specifically to recognize the voice of the relay agent, convert the agent's voice message into a data message. Thus, we are not persuaded that Ryan is ambiguous as to its disclosure of translating the words spoken by the call assistant, and we are not persuaded that Ryan discloses only letters (rather than words) being translated.

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For these reasons, we find Ryan discloses the recited “computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream,” recited in claims 1 and 2.

*E. Obviousness over Wycherley and Yamamoto*

Petitioner asserts that claims 1 and 2 of the ’314 patent are unpatentable under 35 U.S.C. § 103 for obviousness over Wycherley and Yamamoto. Pet. 27-30. Petitioner asserts both Wycherley and Yamamoto qualify as prior art to the ’314 patent under 35 U.S.C. § 102(b). Pet. 8, 11-12. Patent Owner challenges Petitioner’s contentions regarding Wycherley and Yamamoto. PO Resp. 37-52.

*1. Yamamoto Is a Printed Publication under 35 U.S.C. § 102(b)*

Petitioner asserts that Yamamoto was published in March 1996 and, therefore, qualifies under 35 U.S.C. § 102(b) as prior art to the ’314 patent. Pet. 11. Patent Owner contends that Yamamoto is not prior art because Petitioner has not provided sufficient evidence to show that Yamamoto was a publicly accessible printed publication more than one year prior to September 8, 1997, the earliest effective filing date claimed by the ’314 patent. Mot. to Exc. Yamamoto; Paper 67.

*a. Evidence of Public Accessibility*

We begin with some procedural background to provide context for the evidence relied on by Petitioner. In April 2014, approximately one month after our Institution Decision, Petitioner served on Patent Owner supplemental evidence in response to Patent Owner’s objections regarding

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the publication date of Yamamoto and, hence, its prior art status. *See* Paper 22, 4; *see also* Paper 63, 3–4 (detailing procedural history). On May 30, 2014, Patent Owner filed its Patent Owner Response, which did not challenge the sufficiency of Petitioner’s evidence demonstrating the public accessibility of Yamamoto, or otherwise contend that Yamamoto is not prior art to the ’314 patent under 35 U.S.C. § 102(b). Paper 30; *see* Paper 63, 4. Rather, Patent Owner waited an additional three months, until August 26, 2014, in its Motion to Exclude Evidence, to challenge the sufficiency of Petitioner’s evidence regarding the public accessibility of Yamamoto. Paper 46; *see* Paper 63, 4.

Petitioner then moved to submit supplemental information under 37 C.F.R. § 123(b), including a transcript of a videotaped interview with Mr. Seiichi Yamamoto, the first named author of the Yamamoto reference. Paper 52; Ex. 2017 (Videoconference Deposition of Seiichi Yamamoto, Aug. 20, 2014) (“Yamamoto transcript”). We granted the motion, and permitted the parties to file supplemental briefing regarding the public accessibility of Yamamoto, including the admissibility of the Yamamoto transcript. *See* Paper 63, 10–11; Paper 65 (Petitioner’s Additional Briefing); Paper 67 (Patent Owner’s Response to Additional Briefing); Paper 68 (Petitioner’s Reply to Patent Owner’s Response to Additional Briefing).

We now turn to the evidence regarding the public accessibility of Yamamoto. The first page of Yamamoto indicates it was a paper presented at the Proceedings of the Acoustical Society of Japan Spring 1996 Research Presentation Conference in March 1996. Ex. 1006. In support of its contention that Yamamoto was publicly accessible in March 1996, Petitioner

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relies primarily on the transcript of the interview with Mr. Yamamoto, in which the parties questioned Mr. Yamamoto regarding the presentation and distribution of the paper at the conference. *See* Ex. 2017. This interview was conducted in connection with the related district court proceeding, *Ultratec, Inc. v. Sorenson Communications, Inc.*, No. 13-CV-00346 (W.D. Wis.). *See* Ex. 2017, 1.

Pursuant to stipulation of the parties, both parties had the opportunity to ask Mr. Yamamoto questions at the interview, an interpreter was present to translate Mr. Yamamoto's testimony, and a court reporter made a stenographic record of the English portion of the interview. *See* Ex. 1062 (Stipulation Regarding Seiichi Yamamoto) ¶¶ 1, 3. The parties also stipulated that the stenographic record of the interview would be treated as sworn deposition testimony in the district court proceeding and, "[w]ith respect to other proceedings, the stenographic record will be treated as a sworn deposition taken in Western District of Wisconsin Case Nos. 13-cv-346 and 14-cv-66 at which both parties appeared and had the opportunity to question the witness." *Id.* ¶ 5.

Patent Owner contends the Yamamoto transcript should be excluded as evidence because the parties did not agree it could be used in this proceeding. Paper 67, 5–6. To the contrary, the parties' stipulation provides that "[t]he use and admissibility of the stenographic record in any other proceedings will be governed by the rules in effect with respect to such other proceeding." Ex. 1062 ¶ 5. Thus, the parties agreed that the Yamamoto transcript may be used in this *inter partes* review to the extent permitted by our rules.

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Patent Owner argues that Board rules require exclusion of the Yamamoto transcript because Mr. Yamamoto was not sworn and did not sign the transcript, and because Petitioner failed to provide advance notice to the Board of its intent to take a foreign language deposition. Paper 67, 6 (citing 37 C.F.R. § 42.53(a), (e), (f)). The Yamamoto transcript, however, does not run afoul of the rules cited by Patent Owner because Petitioner seeks to admit the transcript as a deposition taken in the district court proceeding, not as deposition testimony taken in this *inter partes* review proceeding. *See* Paper 68, 1. Moreover, the parties stipulated that the Yamamoto transcript would be treated as sworn deposition testimony taken in the district court. Ex. 1062 ¶ 5.

Patent Owner further contends that the Yamamoto transcript constitutes inadmissible hearsay under the Federal Rules of Evidence, which apply to this proceeding. Paper 67, 7 (citing 37 C.F.R. § 42.62(a); Fed. R. Evid. 801, 802). Petitioner responds that the Yamamoto transcript is admissible as an exception to the rule against hearsay. Paper 68, 1–3. We agree with Petitioner.

First, Rule 804(b)(1) allows the use of former testimony of an unavailable witness if the testimony “(A) was given as a witness at a trial, hearing, or lawful deposition, whether given during the current proceeding or a different one; and (B) is now offered against a party who had . . . an opportunity and similar motive to develop it by direct, cross-, or redirect examination.” Fed. R. Evid. 804(b)(1). By stipulation of the parties, the interview of Mr. Yamamoto was treated as a lawful deposition in the district court proceeding. Ex. 1062 ¶ 5. Also, both parties had the opportunity to



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develop Mr. Yamamoto's testimony and had the same motive as in this proceeding—to determine whether Yamamoto was publicly accessible. *See* Ex. 1062 ¶ 1; Ex. 2017. As we determined previously, Petitioner reasonably concluded, based on Patent Owner's Response (Paper 30) filed on May 30, 2014, that Patent Owner no longer was challenging the prior art status of the Yamamoto reference, and only became aware of Patent Owner's continued challenge when Patent Owner improperly challenged the sufficiency of the Yamamoto reference in its Motion to Exclude filed on August 26, 2014, well after the time for taking testimony in this proceeding. Paper 63, 7. At that point, Petitioner had no reasonable means for obtaining Mr. Yamamoto's testimony for this proceeding. *See* Paper 48, 3 (Petitioner's Motion for Leave to File Supplemental Evidence Regarding Yamamoto). We determine, therefore, that Mr. Yamamoto was unavailable as a witness, *see* Fed. R. Evid. 804(a), and the Yamamoto transcript is admissible under Rule 804(b)(1).<sup>8</sup>

In addition, the Yamamoto transcript is admissible under Rule 807. First, Mr. Yamamoto's videotaped interview, which was stipulated to be sworn deposition testimony in the district court proceeding, and in which Mr. Yamamoto was subject to cross-examination, "has equivalent circumstantial guarantees of trustworthiness." Fed. R. Evid. 807(a)(1). Also, Petitioner offers the Yamamoto transcript as evidence of a material

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<sup>8</sup> We note that the parties stipulated, for purposes of the district court proceeding, that Mr. Yamamoto's testimony would be deemed former testimony under Rule 804(b) and Mr. Yamamoto was deemed unavailable under Rule 804(a).

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fact—the public availability of a prior art reference—and it is more probative on that point than any other evidence Petitioner can obtain through reasonable efforts because Mr. Yamamoto co-authored the Yamamoto reference and presented it at a conference of the Acoustical Society of Japan. *See* Fed. R. Evid. 807(a)(2), (3). Finally, admitting the Yamamoto transcript is in the interests of justice, as it provides as complete a record as possible regarding the public accessibility of the Yamamoto reference. *See* Fed. R. Evid. 807(a)(4); *see also* Paper 63, 8 (determining that submission of the Yamamoto transcript is in the interests of justice).

Finally, we are not persuaded by Patent Owner’s argument that the Yamamoto transcript should be excluded under Federal Rules of Evidence 602, 603, and 604. Mr. Yamamoto’s testimony indicates that he was present at the conference at which his paper was presented and had personal knowledge of the distribution of the paper, as required by Rule 602. *See* Ex. 2017. As for Rules 603 and 604, requiring an oath or affirmation by a witness and interpreter, respectively, they do not require exclusion of the Yamamoto transcript because the parties stipulated that it would be treated as sworn deposition testimony. *See* Ex. 1062 ¶ 5.

*b. Yamamoto Was Publicly Accessible in March 1996*

Under 35 U.S.C. § 102(b), a person is not entitled to a patent if “the invention was . . . described in a printed publication . . . more than one year prior to the date of the application for patent.” “The statutory phrase ‘printed publication’ has been interpreted to mean that before the critical date the reference must have been sufficiently accessible to the public

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interested in the art; dissemination and public accessibility are the keys to the legal determination whether a prior art reference was ‘published.’” *In re Cronyn*, 890 F.2d 1158, 1160 (Fed. Cir. 1989) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1568 (Fed. Cir. 1988)). The determination of whether a reference qualifies as a printed publication “involves a case-by-case inquiry into the facts and circumstances surrounding the reference’s disclosure to members of the public.” *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004).

In the present case, based on the circumstances surrounding the presentation and dissemination of the Yamamoto reference, we conclude that Yamamoto was publicly accessible in March 1996, more than one year before September 8, 1997, the earliest effective filing date of the claims of the ’314 patent. As indicated on the first page of the reference, the Yamamoto reference was presented at the March 1996 Research Presentation Conference of the Acoustical Society of Japan. Ex. 1006, 1. Mr. Yamamoto’s testimony, which we find credible, confirms that he gave an oral presentation of the paper at Special Session A of the conference on March 26, 1996. Ex. 2017, 6:8-23, 13:23-14:3. According to Mr. Yamamoto’s estimate, 100 to 150 people attended his presentation of the paper. *Id.* at 13:23–14:3.

The Acoustical Society created a book containing all the papers presented at the conference, including the Yamamoto paper. *Id.* at 8:12-23, 12:24–13:10, 15:18–19. Conference attendees were able to purchase a copy of the book at the time of registration. *Id.* at 13:8-10, 14:17-21. Beginning on the first day of the conference, copies of the book were “piled up on the

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registration desk for purchase, for anyone who wished to purchase.” *Id.* at 16:19–23. According to Mr. Yamamoto, many of his friends who attended the conference purchased a copy of the book. *Id.* at 9:18–10:2, 15:11–17. He also made the paper available to anyone who asked for a copy, and he recalls providing copies to subordinates of Mr. Fujioka, his co-author, though he does not recall the precise timing. *Id.* at 14:8–13, 16:6–14.

The facts of this case are similar to those in *MIT v. AB Fortia*, 774 F.2d 1104 (Fed. Cir. 1985). In that case, our reviewing court concluded that a paper that had been presented orally at a conference attended by 50 to 500 interested persons of ordinary skill in the art, and had been disseminated to at least six persons, was a printed publication for prior art purposes. *Id.* at 1109. Similarly, Mr. Yamamoto orally presented his paper to 100 to 150 persons of ordinary skill in the art, and many conference attendees received a copy of the book containing the paper. Ex. 2017, 9:18-10:2, 13:23-14:3, 15:11-17.

Patent Owner argues that without a detailed analysis of factors such as the length of time the paper was displayed at a conference, the expertise of its target audience, and the expectations regarding and ease with which the material would be copied, Yamamoto cannot be considered prior art. Paper 67, 7–8 (citing *In re Klopfenstein*, 380 F.3d at 1350). Those factors, however, are relevant when determining the public accessibility of a reference that was displayed at a conference without distribution to the public. *In re Klopfenstein*, 380 F.3d at 1350. In contrast, the Yamamoto reference was included in a book of papers presented at the Acoustical Society conference that was available for purchase by all conference

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attendees, and actually was purchased by many attendees. Ex. 2017, 9:18-10:2, 12:24-13:10, 15:11-19.

Patent Owner also contends that the distribution of the Yamamoto reference does not show it was accessible publicly because there is no evidence that it occurred among people in the interested public. Paper 67, 8-9. Although Mr. Yamamoto could not recall if the Acoustical Society of Japan's March 1996 conference was open to non-Society members, Ex. 2017, 7:23-8:11, attendance by at least 100 to 150 Society members is sufficient to show the Yamamoto reference was available to persons interested in the subject matter of the paper, voice recognition applications in communication systems. This case is distinguishable from those cited by Patent Owner, which involve papers posted online for a small, closed group of specialists. *See* Paper 67, 8-9 (citing *SRI Int'l Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1197 (Fed. Cir. 2008); *Samsung Electronics Co. v. Rembrandt Wireless Techs., LP*, 2014 WL 4537478, at \*5, IPR2014-00515 (PTAB Sept. 9, 2014)).

For these reasons, based on the facts and circumstances regarding the presentation and dissemination of the Yamamoto reference, we determine that Yamamoto was publicly accessible in March 1996. Yamamoto,

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therefore, qualifies as a printed publication that is available as prior art to claims 1 and 2 of the '314 patent.<sup>9</sup>

## 2. *Summary of Wycherley*

Wycherley describes a system for a relay service for establishing a telephone call between a hearing person and a hearing-impaired person. Ex. 1002, 1:6-10. To reduce the time a service attendant is involved in such a telephone call, Wycherley's relay system uses text-to-speech processing and, on a limited basis, automatic speech recognition. *Id.* at Abstract. Wycherley's relay system includes Automatic Speech Recognition (ASR) units, which may be software that is available commercially and trained using a voice template, enabling the voice processor to recognize each word uttered by the speaker in a call. *Id.* at 3:59-60; 4:26-29, 35-56. In the event of excessive translation errors by the automated translation of the hearing person's words, Wycherley's relay system transfers the telephone call to a call attendant, who "may request that the speaker repeat the substance of his or her response" and type the words spoken by the hearing person for transmission to the hearing impaired person's TDD terminal. *Id.* at 5:42-47; *see id.* at 5:1-53.

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<sup>9</sup> Because we conclude that Yamamoto was publicly accessible in March 1996, we need not address Petitioner's argument and evidence regarding public accessibility in May 1996, when Petitioner asserts that the book containing Mr. Yamamoto's paper was received by the Japan Science and Technology Agency. *See* Paper 65, 6.

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### *3. Summary of Yamamoto*

Yamamoto describes tests of voice recognition systems. Ex. 1006, 34-36. Along with other examples, Yamamoto describes a test with an operator assistance system for international calling, noting a preliminary step in an operator assistance system for international calling is “voice recognition of an operator repeating the question from the [international calling] user” to increase efficiency. *Id.* at 35, § 3.2.

### *4. Claims 1 and 2*

To support its contentions that claims 1 and 2 would have been obvious over Wycherley and Yamamoto, Petitioner relies on analysis provided with respect to the references and the declaration testimony of Mr. Occhiogrosso. Patent Owner responds, relying on declaration testimony by Mr. Ludwick and others. PO Resp. 24-37 (citing Exs. 2002, 2004, 2005, and 2010). Having considered the parties’ contentions and supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 2 are unpatentable for obviousness over Wycherley and Yamamoto for the reasons set forth below.

Petitioner relies on Wycherley as teaching or suggesting the speaker, microphone, and modem recited in claims 1 and 2. *See* Pet. 28; *id.* at 20-26. Petitioner relies on a combination of Wycherley and Yamamoto for teaching or suggesting “a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream,” as recited in

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claims 1 and 2. As acknowledged by Petitioner, Wycherley's relay service uses "caller-specific templates to implement speaker-dependent voice recognition directly on the voice of the unimpaired caller." Pet. 27 (citing Ex. 1002, 3:43-4:56).

Petitioner further relies on Wycherley for disclosing a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of *the hearing caller* (rather than trained to the voice of the call assistant, as recited in claims 1 and 2) to translate the words spoken in voice by *the hearing caller* (rather than the call assistant) into a digital text stream. In combination with Wycherley's teaching of a computer programmed for the caller, Petitioner relies on Yamamoto's description of an international call assistance system as teaching the recited call assistant. *See* Pet. 27-30. Specifically, Petitioner relies on Yamamoto's description of an international call assistance system that uses "voice recognition of an operator restating the question from the [international calling] user" as teaching or suggesting "the computer programmed to use a voice recognition computer software package" to translate the voice of the call assistant. *Id.* (emphasis omitted). Thus, Petitioner contends the combination of Wycherley and Yamamoto teaches or suggests "a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream," as recited in claims 1 and 2.



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Petitioner, relying on Mr. Occhiogrosso for support, indicates both Wycherley and Yamamoto “involve the use of voice recognition to increase the efficiency of operator assisted telephone services” and contends “it would have been obvious to incorporate *Yamamoto*’s intermediate re-voicing solution into *Wycherley* during situations where, like *Yamamoto*, full automation was not practical.” Pet. 28 (citing Ex. 1014 ¶ 42).

We are persuaded that Wycherley teaches or suggests a speaker, microphone, and modem as recited in claims 1 and 2. *See* Pet. 28; *id.* at 20-26. Wycherley describes an attendant console at which an attendant listens and depicts headsets connected to attendant terminals 220 (Ex. 1002, 1:31-37; Fig. 1), which teaches or suggests a speaker. Wycherley describes that the attendant transmits an oral version of a displayed text message transmitted by a hearing-impaired person (*id.* at 1:27-37), which teaches or suggests a microphone. Wycherley’s Automatic Speech Recognition (ASR) unit includes modem 305 for transmission of digitized words to the TDD user (*id.* at 5:13-14; Fig. 1 (depicting modem 305 in an ASR unit)). Wycherley further describes, after transmitting to the hearing person an oral version of a displayed text message transmitted by a hearing-impaired person, the attendant at the console “listens to” the hearing person’s oral response. *Id.* at 1:31-37. Thus, we are persuaded that Wycherley teaches or suggests “receiv[ing] voice communications from the telephone system and transmit[ting] those voice communications to the ear of the call assistant.”

We also are persuaded that Petitioner’s proposed combination of Wycherley’s relay service that uses text-to-speech processing and automatic speech recognition with Yamamoto’s voice recognition system used to

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provide operator assistance would have taught or suggested to a person of ordinary skill in the art “a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream,” as recited in claims 1 and 2. Thus, we conclude that the teachings of Wycherley and Yamamoto in combination would have suggested the subject matter of claims 1 and 2 as a whole to one of ordinary skill in the art.

We also determine that Petitioner has articulated sufficient reasoning with some rational underpinning to support the legal conclusion that the subject matter of the claims would have been obvious to one of ordinary skill in the art in view of the teachings of Wycherley and Yamamoto as combined in the manner proposed by Petitioner. *See KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). As noted by Petitioner (Pet. 28), both references disclose using voice recognition systems to increase the efficiency of operator-assisted telephone services. *See* Ex. 1002, 3:43-57; Ex. 1006, 35; *see also* Ex. 1014 ¶ 42. We agree that, at the time of the invention in 1997 and in view of the commercial availability of Dragon Naturally Speaking, it would have been obvious to one skilled in the art to mix and match the teachings of voice recognition systems used in operator-assisted telephone services as a whole to arrive at the claimed invention, because the prior art shows a person of ordinary skill could predictably use known elements according to their established functions and address a common problem—increasing the efficiency of operator assisted telephone services. *See KSR*, 550 U.S. at 416 (stating “[t]he combination of

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familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results”), 420 (indicating “[u]nder the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed”).

We first turn to Patent Owner’s contention that Wycherley and Yamamoto do not teach the subject matter of the claims—particularly, the recited “a digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream.” PO Resp. 38-44.

Patent Owner contends that Wycherley does not disclose use of voice recognition software that has been trained to the call assistant’s voice, but rather trained to the caller. Patent Owner contends that Yamamoto, rather than facilitating communication between a hearing person and a hearing-impaired person, only provides examples of single word speech recognition and speech recognition software used for database information retrieval tasks. Patent Owner asserts that Yamamoto does not disclose the subject matter of claims 1 and 2 because the claims require “a real-time continuous speech recognition application” and require that the call assistant “repeats . . . everything” the caller says. PO Resp. 40, 42. Patent Owner further indicates Yamamoto is unsuitable to perform the subject matter of the claimed subject matter because Yamamoto describes (i) speech recognition only for database retrieval tasks, (ii) word spotting voice recognition, (iii) using isolated word recognition because it recognizes continuous speech

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recognition is not yet commercially viable, and (iv) a continuous voice recognition system as being only able to identify a restricted set of responses.

The pertinent question, however, is whether the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art in view of the combined references, not whether the references in the asserted combination individually teach the subject matter of claims 1 and 2. 35 U.S.C. § 103(a); *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“the test [for obviousness] is what the combined teachings of the references would have suggested to those of ordinary skill in the art”). Patent Owner’s arguments in large measure amount to attacks on Wycherley and Yamamoto individually, without sufficient consideration of the combination of Wycherley and Yamamoto, an approach we find unpersuasive. Patent Owner’s arguments regarding Yamamoto unduly focus on specific, isolated capabilities described in Yamamoto without addressing what those capabilities, in combination with Wycherley’s relay with voice recognition software trained to the caller’s voice, would have suggested to one of ordinary skill in the art at the time of the invention of the ’314 patent.

Notably, Yamamoto describes “a continuous speech recognition system driven by a context-free grammar” and describes an operator assistance system that uses voice recognition of an operator by repeating words heard from a caller. Ex. 1006, 34-35. Further, Dragon Naturally Speaking was available commercially in June 1997 before the invention in September 1997. Thus, we credit the testimony of Petitioner’s declarant, Mr. Occhiogrosso, that that these features would have been known in

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September 1997 to one of ordinary skill in the art in view of the teachings of Wycherley and Yamamoto. Pet. 28; Ex. 1014 ¶ 38-43.

In challenging the combination of Wycherley and Yamamoto, Patent Owner further contends, with support of Mr. Ludwick, that a person of ordinary skill would not have considered Wycherley because (i) continuous speech recognition technology did not exist in 1990, when the application that issued as Wycherley was filed, (ii) some implemented aspects of Wycherley's relay were "disliked by customers," and (iii) Wycherley teaches away from designing a relay employing revoicing. PO Resp. 44-47.

Mr. Ludwick's testimony regarding the state of the art in 1990 has little probative value because the time of the invention is September 1997, as discussed previously. *See* 35 U.S.C. § 103(a) ("A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious *at the time the invention was made* to a person having ordinary skill in the art to which said subject matter pertains.") (emphasis added). Further, as discussed previously, continuous speech recognition software was known by the invention date of claims 1 and 2 in 1997.

Nor do we agree with Patent Owner that Wycherley teaches away from the claimed invention. Patent Owner has not identified where Wycherley criticizes, discredits, or otherwise discourages "us[ing] a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream," as recited in claims 1 and 2. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

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Moreover, Mr. Ludwick's statements concerning customer dislike of some features of an implementation of Wycherley's relay are not persuasive that a person of ordinary skill in the art would not look to Wycherley. First, Patent Owner has not identified the aspect of the implementation of Wycherley's relay that was less desirable than the claimed invention. Second, even if some aspect of the implementation of Wycherley's relay was less desirable than the claimed invention, that, in itself, is insufficient to teach away from the purportedly inferior alternative of Wycherley unless the disclosure criticizes, discredits, or otherwise discourages that alternative. *Cf. Fulton*, 391 F.3d at 1200 ("a finding that the prior art as a whole suggests the desirability of a particular combination need not be supported by a finding that the prior art suggests that the combination claimed by the patent applicant is the preferred, or most desirable, combination"). Thus, we are not persuaded that Wycherley teaches away from the subject matter recited in claims 1 and 2.

Further, Patent Owner contends that Yamamoto teaches away because Yamamoto states that "continuous speech and spontaneous speech recognition [was still] not yet commercially viable." PO Resp. 49 (citing Ex. 1006, 33; Ex. 2010 ¶ 51). We are not persuaded. First, as noted previously, we do not agree that Yamamoto indicates that "recognition of continuous speech and spontaneous speech recognition is not yet commercially viable" in all contexts. Rather, we have determined that Yamamoto teaches particular techniques—word spotting—are useful in contexts in which "recognition of continuous speech and spontaneous speech recognition is not yet commercially viable." Ex. 1003 at 33. Although this

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indicates that such technology is not viable in some situations, this does not indicate the technology is not viable commercially in all contexts.

Moreover, Yamamoto indicates “[v]oice-recognition systems [and] voice-recognition software . . . have arrived at a usable state” (Ex. 1006, 33), which further undercuts Patent Owner’s position that voice recognition technology is not viable commercially. Yamamoto also indicates “a variety of voice recognition application systems in communication networks are also becoming commercially available” (*id.*), which further undercuts Patent Owner’s position that voice recognition technology is not viable commercially. Thus, we do not agree Yamamoto criticizes, discredits, or otherwise discourages—and so teaches away—from the claimed subject matter.

According to Patent Owner, Yamamoto does not teach how to incorporate automatic speech recognition into real time telephone communication between users. PO Resp. 48. Yamamoto, however, need not teach how to incorporate automated speech recognition into real-time telephone communication between users. A determination of obviousness is based not on teaching bodily incorporation of parts from one disclosed system into another, but, as noted previously, on what the combined teachings would have suggested to one with ordinary skill in the art. *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012); *Keller*, 642 F.2d at 425.

Nor are we persuaded that automated speech recognition, enabled by Dragon Naturally Speaking in 1997, would have been uniquely challenging or otherwise beyond the level of ordinarily skilled artisans to combine with Wycherley’s relay system at the time the invention was made in August or

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September 1997. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007). Indeed, the '314 patent describes the use of a voice recognition software, such as Dragon Naturally Speaking, but does not describe the technical details of how to incorporate Dragon Naturally Speaking into the computer terminal containing a copy of the software. *See* Ex. 1021, 5:42-57.

Patent Owner further submits Yamamoto is focused “on operated-assisted database tasks,” Yamamoto is unsuitable for a relay application for a conversation between multiple parties, and that modifying Wycherley so that the relay agent repeats the unimpaired user’s words would render Wycherley unsatisfactory for its intended purpose. PO Resp. 47-48. Patent Owner, relying on its declarant, reasons that the use of a relay agent to repeat the caller’s words “would negate Wycherley’s entire premise of providing a more cost efficient relay service by reducing or eliminating the call assistant’s involvement.” PO Resp. 47 (citing Ex. 2010 ¶ 54). We disagree because we credit Mr. Occhiogrosso’s testimony (Ex. 1053 ¶ 60) that augmenting Wycherley’s call assistants with voice recognition software would increase their efficiency, and thus help achieve Wycherley’s goal of minimizing use of call assistants.

In view of the foregoing, we are persuaded that Petitioner has articulated a sufficient reason to support a conclusion of obviousness in view of Petitioner’s combination of Wycherley and Yamamoto. *See* PO Resp. 44-49.



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### 5. *Secondary Considerations*

Factual inquiries for an obviousness determination include secondary considerations based on evaluation and crediting of objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Notwithstanding what the teachings of the prior art would have suggested to one with ordinary skill in the art at the time of the '314 patent's invention, the totality of the evidence submitted, including objective evidence of nonobviousness, may lead to a conclusion that the challenged claims would not have been obvious to one with ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). Secondary considerations may include any of the following: long-felt but unsolved need, failure of others, unexpected results, commercial success, copying, licensing, and praise. *See Graham*, 383 U.S. at 17; *Leapfrog Enters.*, 485 F.3d at 1162.

To be relevant, evidence of nonobviousness must be commensurate in scope with the claimed invention. *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) (citing *In re Tiffin*, 448 F.2d 791, 792 (CCPA 1971)); *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998). Thus, to be accorded substantial weight, there must be a nexus between the merits of the claimed invention and the evidence of secondary considerations. *In re GPAC*, 57 F.3d at 1580. “Nexus” is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in determining nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). The burden of showing that there is a nexus lies with the Patent Owner. *Id.*; *see In re Paulsen*, 30 F.3d at 1482.

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Patent Owner alleges “substantial praise for the inventions claimed in [Patent Owner’s] patents, including the ’314 Patent, the long-felt but unresolved need of the deaf and hard of hearing community, the commercial success of the products and services embodying the invention, and the failure of others to provide a relay service or other solution that provided the benefits of the claimed inventions.” PO Resp. 49-51. For support, Patent Owner proffers declarations by Ms. Brenda Battat (Ex. 2004) and Ms. Constance Phelps (Ex. 2005) describing general innovations of Patent Owner’s CapTel Service and its CapTel phone and describing their benefits to the deaf and hard of hearing community. PO Resp. 50-51; *see* Ex. 2004 ¶¶ 18-19, 25-41.

In an attempt to establish the requisite nexus, Patent Owner relies on a declaration of Mr. Ludwick (Ex. 2002) asserting that it “explain[s], on a feature by feature basis, the nexus between those secondary considerations and the claimed design” and “illustrates, in chart form, that the CapTel system and various models of CapTel phones embody the claims of the present invention.” PO Resp. 51.

Patent Owner’s Response contains no substantive arguments. *Id.* at 50-51. Instead, Patent Owner merely lists various common forms of secondary considerations evidence, without exposition. This does not provide sufficient analysis for us to determine whether Patent Owner has provided adequate evidence of secondary considerations and a nexus between any such evidence and the merits of the claimed invention. Thus, Patent Owner’s broad contentions regarding secondary considerations in its Patent Owner Response do not demonstrate nonobviousness.

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Moreover, Patent Owner's declarations fail to establish a nexus between the merits of the claimed invention and the evidence of secondary considerations. To show a nexus, Patent Owner relies on Mr. Ludwick's declaration, which describes his visit to CapTel, Inc.'s relay center in Madison, Wisconsin. Ex. 2002 ¶ 47. Mr. Ludwick's chart presents his conclusions based on personal observation that the CapTel Service meets each claim limitation of the '314 patent. Ex. 2002 ¶ 48 (pages 28-30). For example, regarding "a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream," recited in claims 1 and 2, Mr. Ludwick asserts:

I personally observed that the CapTel Service meets this claim element. I further confirmed this from my own knowledge of CapTel Service. This feature of the CapTel Service relay is present when the Service is used with each of the CapTel Phones and has always been included as part of the CapTel Service.

Ex. 2002 ¶ 48 (page 28).

Because Mr. Ludwick's conclusions are based on personal observations, without sufficient supporting facts or data, his testimony has little probative value. *See In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d at 1368 ("[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations."); *see also* Fed. R. Evid. 702 (providing one may testify in the form of an opinion if the testimony is based on sufficient facts or

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data). As such, Mr. Ludwick's conclusory assertions do not provide a sufficient connection between objective evidence and the claimed invention, and so do not establish the requisite nexus between the merits of the claimed invention and the evidence of secondary considerations.

Accordingly, Patent Owner fails to provide sufficient credible evidence to support its allegations of nonobviousness based on secondary considerations. When we balance Petitioner's evidence of obviousness against Patent Owner's asserted objective evidence of nonobviousness, we determine that a preponderance of the evidence supports Petitioner's position that claims 1 and 2 would have been obvious over Wycherley and Yamamoto.

### III. CONCLUSION

Petitioner has proven, by a preponderance of the evidence, that claims 1 and 2 of the '314 patent are unpatentable under 35 U.S.C. § 102(e) as anticipated by Ryan and are unpatentable under 35 U.S.C. § 103(a) as obvious over Wycherley and Yamamoto.

Patent Owner's Motions to Exclude the testimony of Mr. Occhiogrosso and the Yamamoto reference are *denied*.

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#### IV. ORDER

Accordingly, it is hereby:

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 2 of U.S. Patent No. 6,233,314 B1 are unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude the testimony of Mr. Occhiogrosso (Paper 45) is denied;

FURTHER ORDERED that Patent Owner's Motion to Exclude the Yamamoto reference (Paper 46) is denied; and

FURTHER ORDERED that, because this is a final written decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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PETITIONER:

Brian W. Oaks  
Bryant C. Boren Jr.  
Harper S. Batts  
Adam F. Smoot  
Joseph Gray  
BAKER BOTTS L.L.P.  
brian.oaks@bakerbotts.com  
bryant.c.boren@bakerbotts.com  
harper.batts@bakerbotts.com  
adam.smoot@bakerbotts.com  
joseph.gray@bakerbotts.com

PATENT OWNER:

Michael Jaskolski  
Martha Snyder  
Nikia L. Gray  
Michael J. Curley  
QUARLES & BRADY LLP  
michael.jaskolski@quarles.com  
martha.snyder@quarles.com  
nikia.gray@quarles.com  
Michael.curley@quarles.com

Trials@uspto.gov  
Tel: 571-272-7822

Paper 80  
Entered: December 1, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CAPTIONCALL, LLC,  
Petitioner,

v.

ULTRATEC, INC.,  
Patent Owner.

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Case IPR2013-00540  
Patent 6,233,314 B1

Before WILLIAM V. SAINDON, BARBARA A. BENOIT, and  
LYNNE E. PETTIGREW, *Administrative Patent Judges*.

BENOIT, *Administrative Patent Judge*.

DECISION  
Denying Patent Owner's Request for Rehearing  
*37 C.F.R. § 42.71*

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## INTRODUCTION

CaptionCall, LLC (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1 and 2 of U.S. Patent No. 6,233,314 B1 (Ex. 1021, “the ’314 patent”). Paper 2 (“Pet.” or “Petition”). We instituted an *inter partes* review for claims 1 and 2. Paper 8. In our Final Written Decision, we determined that Petitioner had shown, by a preponderance of the evidence, that claims 1 and 2 were unpatentable. Paper 78 (“Final Dec.” or “Final Decision”). Patent Owner, Ultratec, Inc., requests a rehearing of the Final Decision by an expanded panel. Paper 79 (“Req.” or “Request”).

Having considered Patent Owner’s Request, we decline to modify our Final Decision and deny the Request for Rehearing.

## ANALYSIS

A request for rehearing must identify specifically all matters the party believes we misapprehended or overlooked, and the place where each matter was addressed previously in a motion, an opposition, or a reply. 37 C.F.R. § 42.71(d). Additionally, Patent Owner, as the party challenging the Final Decision, has the burden of showing the decision should be modified. *Id.*

We first address Patent Owner’s allegations of matters that we misapprehended or overlooked (Req. 1–14). We then address Patent Owner’s allegations of improper panel composition (*id.* at 1, 14–15).

### *Matters Allegedly Misapprehended or Overlooked*

Patent Owner alleges we misapprehended or overlooked matters involving the status of an asserted prior art reference, admission of evidence, claim construction, and evidence of secondary considerations. We address each issue in turn.



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*Status of Ryan as Prior Art*

In the Final Decision, in response to Patent Owner’s argument that Ryan<sup>1</sup> did not qualify as prior art because it was not enabled (Paper 30, 15–24 (“PO Resp.”)), we determined that Ryan was enabled prior to the date of invention of the challenged patent in 1997 and, therefore, qualified as prior art to the challenged claims. Final Dec. 18–23.

In its Request for Rehearing, Patent Owner argues, as it did in its Patent Owner Response, that for a patent to serve as prior art the patent must be enabled as to its own earliest claimed effective filing date in 1994. Req. 1–4; PO Resp. 15–22. We addressed this argument in the Final Decision and additionally examined the evidence of record as to whether Ryan would have enabled one of ordinary skill in the art to make the invention without undue experimentation prior to the date of invention of the challenged patent. Final Dec. 18–23. We are not persuaded that we overlooked or misapprehended Patent Owner’s prior argument or made an erroneous interpretation of law.

Patent Owner additionally argues that our consideration of Ryan as prior art as of the date of invention of the challenged patent (1997) was “substantially different than the adopted ground” at issue in the *inter partes* review because the Petition (Paper 1) did not discuss this issue. Req. 5 (“The Petition only discussed potential priority dates in 1994 and 1996, not 1997.”).

We disagree. As noted in our Decision to Institute, *inter partes* review was instituted for “[c]laims 1 and 2 as anticipated under 35 U.S.C. § 102 by Ryan.” Paper 8 (“Decision to Institute”), 15 (IV. ORDER).

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<sup>1</sup> U.S. Patent No. 5,809,112 (Ex. 1004).

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During the *inter partes* review, Patent Owner argued, in its Patent Owner Response, that Ryan did not anticipate the challenged claims (PO Resp. 15–37), including a challenge to the prior art status of Ryan noted previously (*id.* at 15–22). The Final Decision discussed the instituted ground of anticipation by Ryan and addressed Patent Owner’s assertions, including those regarding the prior art status of Ryan. Final Dec. 16–31.

In a similar vein, Patent Owner argues it should have received express notice “that enablement would be assessed in 1997” so it could submit evidence concerning enablement in 1997. Req. 6. We are not persuaded by this argument. First, Patent Owner expressly argued this issue in a section of its Patent Owner Response titled “Ryan Was Not Enabled At Any Point Before The Date Of Invention Of The [challenged patent].” PO Resp. 23 (Section VIII.B.2); *see id.* (asserting the date of invention of June 23, 1997). Thus, Patent Owner submitted arguments concerning enablement in 1997, the very issue about which Patent Owner now contends it was not informed and so missed the opportunity to submit relevant evidence. Moreover, as noted in our Final Decision, Patent Owner and Petitioner did not dispute that the “re-voicing limitation” was enabled on June 23, 1997, with the release of commercial voice recognition software to the public. Final Dec. 19–20 (citing PO Resp. 23, Reply 4, Exs. 2011, 2012, and 2013). As noted in our Final Decision, public availability of the commercial voice recognition software as of 1997 is corroborated by the challenged patent itself. Final Dec. 20 (quoting Ex. 1021, 5:50–57).

Patent Owner further asserts we overlooked evidence that the invention was conceived and diligently reduced to practice before Ryan was enabled. Req. 5–6 (citing Exs. 2011, 2012, 2013). We did not overlook this

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evidence. Rather, we examined this evidence in our Final Decision and found the evidence insufficient. Final Dec. 19 (“Patent Owner’s earliest proffered evidence dates back only to August 5, 1997, not to June 23, 1997,” when Ryan was enabled); *see id.* at 18–19 (analyzing Patent Owner’s evidence offered in Exhibits 2011, 2012, and 2013).

For these reasons, we are not persuaded that we overlooked or misapprehended Patent Owner’s prior argument or made an erroneous interpretation of law concerning the availability of Ryan as prior art to the challenged claims.

*Yamamoto Transcript*

Patent Owner contends we circumvented our own rules in admitting the transcript<sup>2</sup> of a videotaped interview with Mr. Seiichi Yamamoto, the first named author of the Yamamoto reference.<sup>3</sup> Req. 6–10; *see* Paper 63 (Decision on Petitioner’s Motion to Submit Supplemental Information). The interview was conducted in connection with a related district court proceeding between the parties. *See* Final Dec. 31. In the district court proceeding, the parties stipulated that the Yamamoto transcript—a stenographic record of the English portion of the interview (questions from both parties and an interpreter’s translation of Mr. Yamamoto’s testimony)—would be treated as sworn deposition testimony in the district court proceeding and, “[w]ith respect to other proceedings, the stenographic

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<sup>2</sup> Ex. 2017 (Videoconference Deposition of Seiichi Yamamoto, Aug. 20, 2014) (“Yamamoto transcript”).

<sup>3</sup> Yamamoto is a Japanese language document—Seiichi Yamamoto and Masanobu Fujioka, *New Applications of Voice Recognition*, Proc. JASJ Conf. (March 1996) (Ex. 1005; Ex. 1006 (English language translation)).

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record will be treated as a sworn deposition taken in [the district court proceeding] at which both parties appeared and had the opportunity to question the witness.” Ex. 1062 ¶ 5 (Stipulation Regarding Seiichi Yamamoto). As explained in our Final Decision, we granted Petitioner’s motion to submit the Yamamoto transcript as supplemental information under 37 C.F.R. § 42.123(b) relating to the prior art status of Yamamoto and, after supplemental briefing by the parties, determined the Yamamoto transcript was admissible. Final Dec. 30–35.

Patent Owner argues in its Request for Rehearing that the Yamamoto transcript is inadmissible because it does not satisfy the requirements that all testimony, other than uncompelled direct testimony, must be in the form of a deposition transcript, 37 C.F.R. § 42.53(a), and that the witness shall be sworn, 37 C.F.R. § 42.53(f)(1). Req. 7. Therefore, according to Patent Owner, the Yamamoto transcript was “not taken, sought, or filed in accordance with these regulations [and] is not admissible.” *Id.* (citing 37 C.F.R. § 42.61(a)). Rule 42.53, however, is titled “Taking Testimony” and applies only to testimony taken “during a testimony period set by the Board” for purposes of a particular review proceeding. 37 C.F.R. § 42.53(b); *see also* 37 C.F.R. § 42.53(c) (providing time limits set by the Board); *id.* § 42.53(d) (providing notice requirements). As stated in our Final Decision, Petitioner sought to admit the Yamamoto transcript as supplemental information, not as deposition testimony taken in this *inter partes* proceeding. Final Dec. 31. And based on the parties’ stipulation in district court, we treated the Yamamoto transcript as sworn deposition testimony taken in the district court. *Id.* at 33–35 (citing Ex. 1062 ¶ 5). Petitioner filed the Yamamoto transcript as supplemental information under

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37 C.F.R. § 42.123(b), establishing that the Yamamoto transcript reasonably could not have been obtained earlier and that its consideration was in the interests of justice. Paper 63, 7–8. Therefore, Petitioner’s filing of the Yamamoto transcript complied with Board rules, and we properly relied on it in determining the public accessibility of Yamamoto. *See* Final Dec. 30–35.

Tangentially to its contentions regarding the Yamamoto transcript, Patent Owner contends we improperly admitted Petitioner’s evidence regarding public accessibility of the Yamamoto reference in May 1996. Req. 9 (citing Final Dec. 39; Paper 65, 6). Patent Owner’s contention is inapposite. We determined that the Yamamoto reference was publicly accessible in March 1996, not May 1996. Final Dec. 38. Further, in our Final Decision, we stated that “[b]ecause we conclude that Yamamoto was publicly accessible in March 1996, we need not address Petitioner’s argument and evidence regarding public accessibility in May 1996.” Final Dec. 39 n.9 (citing Paper 65, 6).

Having reviewed Patent Owner’s Request, we are not persuaded we misapprehended or overlooked any matter relating to the admissibility of the Yamamoto transcript or other evidence related to the Yamamoto reference.

### *Claim Construction*

Because the parties articulated different views on how “trained to the voice of the call assistant” should be interpreted relative to the asserted prior art, we analyzed Patent Owner’s implied constructions of the term and Patent Owner’s declarant’s testimony concerning the same. Final Dec. 6–8. In its Request for Rehearing, Patent Owner argues that we “misapprehended claim construction law” in determining software “trained to the voice of the

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call assistant” was not limited to training to the voice of one and only one particular call assistant and did not preclude voice recognition software that is designed or built in advance of implementation at the source code level to the voice of a call assistant. Req. 10–13.

First, Patent Owner contends that we erroneously relied on the Specification’s disclosure of “voice pattern.” Req. 10–11. We disagree that our reliance on the Specification’s “Brief Summary of the Invention,” which indicates “a speech recognition computer program which has been trained to the voice *pattern* of the call assistant,” was improper. *See* Final Dec. 7 (quoting Ex. 1021, 2:45-48 (emphasis added)). Rather, in our Final Decision, we contrasted the Specification’s use of “voice *pattern* of the call assistant” in its “Brief Summary of the Invention” with its use of “a voice recognition software package which is specifically trained to the voice of that *particular* call assistant” in the context of a particular embodiment of the invention shown in Figure 1. Final Dec. 7 (quoting Ex. 1021, 2:45–48, 5:45–48).

Based on the evidence in the Specification (including the Specification’s disclosure of “a voice pattern”), we determined that the Specification did not indicate expressly that the voice recognition software is trained to the voice of only that particular call assistant or otherwise indicate that the voice recognition software is trained for the voice of only one call assistant. Final Dec. 7. We concluded that “we will not limit ‘trained to the voice of the call assistant’ to require training to the voice of only one particular call assistant, because the claim language encompasses the invention as disclosed in the Specification—software trained to a voice

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*pattern* of a call assistant.” *Id.* at 8 (citing Ex. 1021, 2:41–49 (“Summary of the Invention”)).

We turn next to Patent Owner’s argument in its Request for Rehearing that we erred in concluding that “trained to the voice of the call assistant” does not include a temporal constraint that precludes voice recognition software that is designed or built in advance of implementation at the source code level to the voice pattern of a call assistant. Req. 12–13 (citing Final Dec. 6–7). According to Patent Owner, it did not have an opportunity to address this issue because it was raised after briefing had concluded. Req. 13.

On the contrary, a central dispute between the parties during the *inter partes* review was whether Ryan discloses “a digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream,” as recited in claims 1 and 2. Final Dec. 24 (citing Pet. 15–16, 18–19; PO Resp. 24–37). As noted in our Final Decision, Patent Owner argued in its Patent Owner Response that Ryan does not disclose the recited “voice recognition software trained to the voice of the call assistant” because Ryan discloses voice recognition software that is “designed.” Final Dec. 27 (citing PO Resp. 25–26). More specifically, according to Patent Owner, Ryan discloses software that is designed in advance of implementation at the source code level and, therefore, the software is not trained to the voice of a call assistant. *Id.* Thus, Patent Owner initially raised in its Patent Owner Response the issue whether “trained to the voice of the call assistant” encompasses software designed in advance of implementation at the source code level. Therefore,

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we do not agree with Patent Owner that it did not have an opportunity to address this issue, which Patent Owner first raised itself.

Along these lines, Patent Owner also asserts in its Request for Rehearing that we overlooked an alleged admission at the Hearing by Petitioner that the claim language inherently includes a temporal constraint that precludes training when the software is designed in advance of implementation at the source code level. Req. 12–13 (citing Paper 77 (Hearing Transcript), 17:3–5). We are not persuaded that we did so. Rather, we considered Petitioner’s statement at the Hearing in light of the evidence of record.

In our Final Decision, we determined that the Specification discloses that the voice recognition software package is trained but does not indicate when or how the training occurs. Final Dec. 7 (citing Ex. 1021, 2:45–48, 5:45–48). We rejected Patent Owner’s argument, relying on its declarant, that software “designed” is not software that is “trained to recognize individual voices” because we found insufficient support for Patent Owner’s contention. Final Dec. 7 (citing PO Resp. 26). As we explained in our Final Decision, Patent Owner’s declarant testified that a person of ordinary skill in the art would not have understood “trained” software to include “designed” software because technology to train software to recognize individual voices did not exist in 1994 and was not used in telecommunications relay service at that time. Final Dec. 7–8 (citing PO Resp. 26; Ex. 2010 ¶¶ 21–22). We weighed this testimony, which relied on capabilities of technology available in 1994, and concluded this testimony had little probative value of the understanding of one of ordinary skill in the art at the time of invention because the year of invention was 1997. Final Dec. 8. The weight we gave



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to Patent Owner's declarant's testimony reflected the parties' agreement that commercial software to train software to recognize individual voices was available in 1997, as discussed previously. *See* Final Dec. 19–20 (citing PO Resp. 23; Reply 4; Exs. 2011, 2012, and 2013). In other words, the understanding of one of ordinary skill as of 1997 was crucial given the shift in technology at that time, and Patent Owner's declarant's testimony was only reflective of the understanding prior to this shift.

Moreover, Petitioner's declarant indicates that one of ordinary skill in the art would have understood that Ryan describes speech recognition software trained to the voice of a call assistant. Ex. 1053 ¶¶ 41–43. The testimony of Petitioner's declarant is supported further by prior art of record that indicates voice recognition software trained to a particular user in relay systems was known. *See* Ex. 1053 ¶ 42 (citing Ex. 1002, 4:37–49). This testimony further undermines Patent Owner's position.

Thus, we do not agree with Patent Owner that we erred by not considering Petitioner's purported "admission" made at the Hearing. Rather, we considered Petitioner's statement in determining that Ryan's description of benefits provided by voice recognition software that "is specifically designed to recognize the voice of particular relay agents" (Ex. 1004, 4:33–38) disclosed the trained software recited in both claims of the '314 patent. *See* Final Dec. 23–30.

For the reasons given, we are not persuaded that we misapprehended claim construction law or that Patent Owner was not provided with an opportunity to address claim construction of "trained to the voice of the call assistant."

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*Evidence of Secondary Considerations*

Patent Owner alleges that we improperly made a determination of obviousness before separately analyzing Patent Owner's evidence of secondary considerations. Req. 13–14. We disagree. Rather, in Section II.E of our Final Decision, we determined the scope and content of the asserted prior art. Final Dec. 39–40. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). And we discussed the claimed subject matter relative to the asserted prior art, which included identifying differences between the claimed subject matter and the prior art in the context of the ordinary level of skill in the art and included a determination that Petitioner, with support of its declarant, had articulated a sufficient reason to support a conclusion of obviousness. Final Dec. 40–49; *see id.* In Section II.E, we also analyzed Patent Owner's secondary considerations of nonobviousness. Final Dec. 50–53. Only after that discussion of obviousness in Section II.E of nearly fifteen pages did we discuss the ultimate conclusion of obviousness of the claimed subject matter. Final Dec. 53.

Unlike the International Trade Commission in *Apple Inc. v. International Trade Commission*, 725 F.3d 1356, 1365 (Fed. Cir. 2013), cited by Patent Owner in its Request, we considered evidence relating to the *Graham* factors—including objective evidence of secondary considerations presented by Patent Owner—before determining the ultimate issue of obviousness. *Compare* Req. 13 *with* Final Dec. 39–53; *see Apple*, 725 F.3d at 1365 (“The ITC, however, never mentioned, much less weighed as part of the obviousness analysis, the secondary consideration evidence . . . presented.”). As noted in our Final Decision, we determined that:

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Accordingly, Patent Owner fails to provide sufficient credible evidence to support its allegations of nonobviousness based on secondary considerations. When we balance Petitioner's evidence of obviousness against Patent Owner's asserted objective evidence of nonobviousness, we determine that a preponderance of the evidence supports Petitioner's position that claims 1 and 2 would have been obvious over Wycherley and Yamamoto.

Final Dec. 53. Thus, we recognized that the "ultimate conclusion of obviousness is a legal conclusion to be reached after weighing all the evidence on both sides." *Apple*, 725 F.3d at 1365.

*Testimony of Patent Owner's Declarant*

Patent Owner alleges we improperly dismissed Patent Owner's declarant's personal observations that secondary considerations of nonobviousness were commensurate in scope with the claimed subject matter. Req. 14. Patent Owner asserts that its declarant's testimony consisted of personal observations by an expert witness. Req. 14.

As noted in our Final Decision, to show the requisite nexus, Patent Owner relied on its declarant's testimony describing his visit to CapTel, Inc.'s relay center in Madison, Wisconsin. Final Dec. 52 (citing Ex. 2002 ¶ 47). We found the "conclusory assertions do not provide a sufficient connection between objective evidence and the claimed invention, and so do not establish the requisite nexus between the merits of the claimed invention and the evidence of secondary considerations." Final Dec. 52–53.

We did not dismiss this testimony; rather, we found it insufficient. To illustrate this insufficiency, in our Final Decision, we cited an example of the testimony provided for the disputed limitation "a digital computer

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connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream”:

I personally observed that the CapTel Service meets this claim element. I further confirmed this from my own knowledge of CapTel Service. This feature of the CapTel Service relay is present when the Service is used with each of the CapTel Phones and has always been included as part of the CapTel Service.

Final Dec. 52 (citing Ex. 2002 ¶ 48 (page 28)). We found that, because the declarant’s conclusions were based on personal observations, without sufficient supporting facts or data, his testimony provided little probative value. Final Dec. 52.

We reject Patent Owner’s assertion that, because there is no testimony to the contrary, we must accept its declarant’s “personal observations” on the claimed features being present in the system provided by CapTel Service and thereby conclude a nexus exists. Req. 14. We cited proper authority in the Final Decision for why we gave little probative value to this testimony of Patent Owner’s declarant—such “conclusory assertions do not provide a sufficient connection between objective evidence and the claimed invention.” Final Dec. 52 (citing *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) (“[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.”)).

### *Conclusion*

Having reviewed Petitioner’s Request, we are not persuaded we misapprehended or overlooked any argument previously presented.

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*Alleged Panel Composition Errors*

Patent Owner requests rehearing before an expanded panel and additionally asserts we exceeded our authority by issuing a Final Written Decision “with less than a full panel.” Req. 1, 14–15. Panel composition for an *inter partes* review is specified in 35 U.S.C. § 6(c), which states “[e]ach . . . inter partes review shall be heard by at least 3 members of the Patent Trial and Appeal Board, who shall be designated by the Director.” The Director’s authority under 35 U.S.C. § 6 to designate panels has been delegated to the Chief Judge. *See* Patent Trial and Appeal Board Standard Operating Procedure 1 (Rev. 14) (May 8, 2015) (“PTAB SOP 1”).

As acknowledged by Patent Owner (Req. 14–15), the Final Decision was decided by three administrative patent judges, who are members of the Board. *See* 35 U.S.C. § 6(a) (indicating that administrative patent judges, along with various members of the United States Patent and Trademark Office, constitute the Patent Trial and Appeal Board). The three administrative patent judges were designated by the Chief Judge according to PTAB SOP 1, titled “Assignment of Judges to Merits Panels, Interlocutory Panels, and Expanded Panels.” The Board, therefore, complied with the statutory requirements for panel composition. Accordingly, we did not issue the Final Decision with less than a “full panel,” as Patent Owner contends.

Moreover, the Chief Judge has discretion to designate judges to decide *inter partes* reviews. *See* PTAB SOP 1 at 2 (§ II.D) (“In general, the Chief Judge will designate a judge or judges, as appropriate, for all matters for AIA reviews.”); *see also AOL Inc. v. Coho Licensing LLC*, Case IPR2014-00771, slip op. at 2 (PTAB Mar. 24, 2015) (Paper 12)

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(informative) (setting forth that the designation of panel members is within the sole authority of the Chief Judge, as delegated by the Director). Patent Owner's Request, therefore, does not show the composition of the panel that issued the Final Decision was arbitrary, capricious, or an abuse of discretion by the Board.

Patent Owner suggests an expanded panel is warranted to decide the Request in view of the panel composition and various allegations that we misapprehended the law. Req. 1. For the reasons given, Patent Owner does not persuade us that we misapprehended the law or the panel of three judges was deficient. Further, the Board's procedures provide examples of reasons for expanding a panel, none of which apply here. PTAB SOP 1 at 3 (§ III.A). For example, an expanded panel may be appropriate when "serious questions have been raised about the continuing viability of an apparently applicable precedential decision of the Board, or a panel of the Board renders a decision that conflicts with a precedential decision of the Board or an authoritative decision of the Board's reviewing courts." *Id.* Patent Owner's Request does not show a conflict or other reason that weighs in favor of panel expansion. Even so, the panel informed the Chief Judge, who has authority to expand a panel, of Patent Owner's request, and the Chief Judge declined to expand the panel. *See* PTAB SOP 1 at 4 (§ III.B). ("The Chief Judge will determine when an expanded panel is to be designated."); *see also Apple Inc. v. Rensselaer Polytechnic Inst.*, Case IPR2014-00319, slip op. at 2 n.1 (PTAB Dec. 12, 2014) (Paper 20) (indicating only the Chief Judge, acting on behalf of the Director, may act to expand a panel and panels do not authorize panel expansion).

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ORDER

It is hereby ORDERED that Petitioner's Request for Rehearing is *denied*.

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PETITIONER:

Brian W. Oaks  
Bryant C. Boren Jr.  
Harper S. Batts  
Adam F. Smoot  
Joseph Gray  
BAKER BOTTS L.L.P.  
brian.oaks@bakerbotts.com  
bryant.c.boren@bakerbotts.com  
harper.batts@bakerbotts.com  
adam.smoot@bakerbotts.com  
joseph.gray@bakerbotts.com

PATENT OWNER:

Michael Jaskolski  
Martha Snyder  
Nikia L. Gray  
Michael J. Curley  
QUARLES & BRADY LLP  
michael.jaskolski@quarles.com  
martha.snyder@quarles.com  
nikia.gray@quarles.com  
Michael.curley@quarles.com



(12) **United States Patent**  
**Engelke**

(10) **Patent No.:** **US 6,233,314 B1**  
(45) **Date of Patent:** **\*May 15, 2001**

(54) **RELAY FOR PERSONAL INTERPRETER**

(75) Inventor: **Robert M. Engelke**, Madison, WI (US)

(73) Assignee: **Ultratec, Inc.**, Madison, WI (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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(21) Appl. No.: **09/288,420**

(22) Filed: **Apr. 8, 1999**

**Related U.S. Application Data**

(63) Continuation of application No. 08/925,558, filed on Sep. 8, 1997.

(51) Int. Cl.<sup>7</sup> ..... **H04M 11/00; H04M 1/64**

(52) U.S. Cl. .... **379/52; 379/88.01; 379/88.14; 379/93.05; 379/93.09**

(58) Field of Search ..... **379/52, 88.13, 379/88.14, 93.09, 93.05, 93.15, 93.17, 93.18, 93.19; 340/825.19; 704/235, 246, 260, 270, 271; 345/1, 115, 123**

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*Primary Examiner*—Fan Tsang

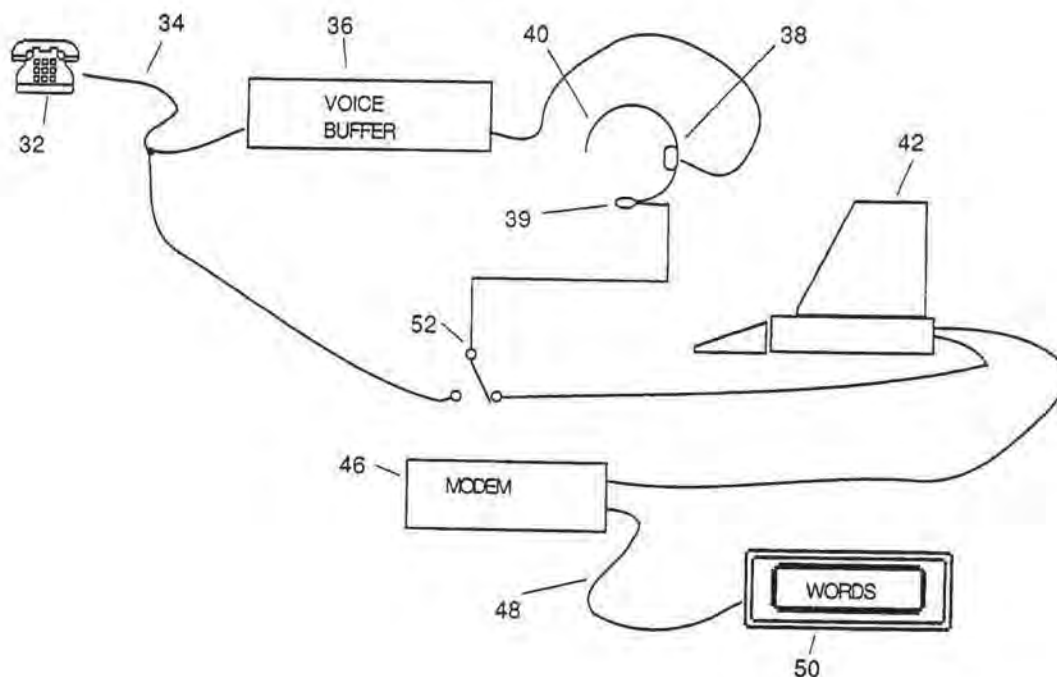
*Assistant Examiner*—Allan Hoosain

(74) *Attorney, Agent, or Firm*—Quarles & Brady LLP

(57) **ABSTRACT**

A relay is described to facilitate communication through the telephone system between deaf people and hearing people. To overcome the speed limitations inherent in typing, the call assistant at the relay does not type most words but, instead, re-voices the words spoken by the hearing person into a computer operating a voice recognition software package trained to the voice of that call assistant. The conversation-type flow of communications achieved by this type of relay enables the design of a new class of interpreters for the deaf.

**2 Claims, 2 Drawing Sheets**



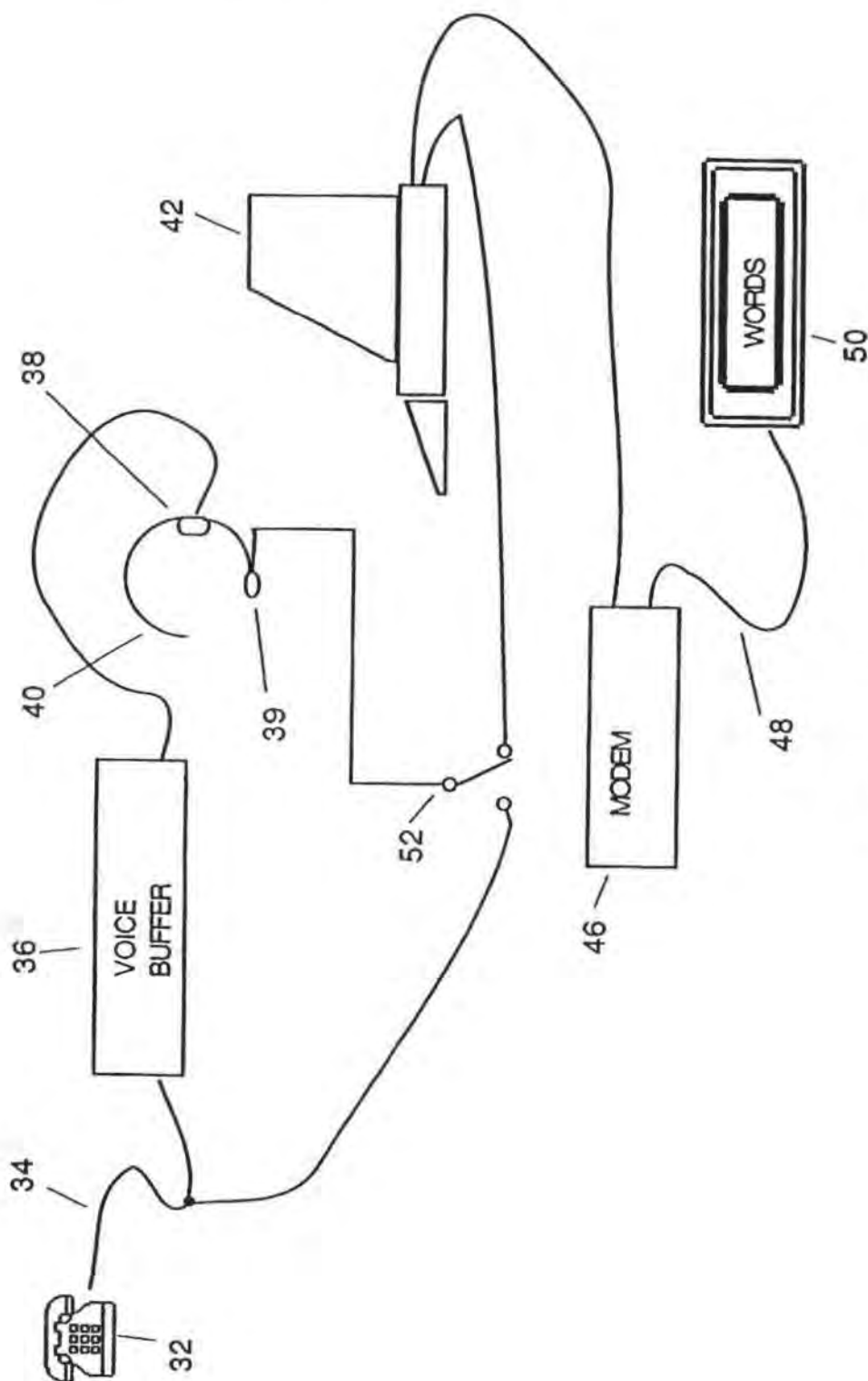


FIG. 1



FIG. 2

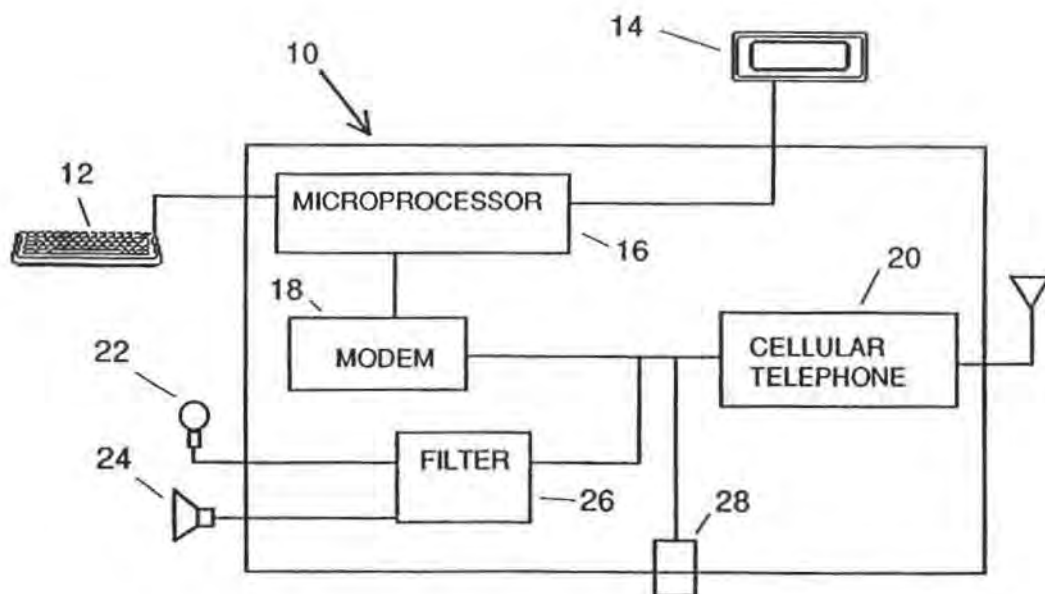


FIG. 3



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**RELAY FOR PERSONAL INTERPRETER****CROSS-REFERENCE TO RELATED APPLICATIONS**

This application is a continuation of Ser. No. 08/925,558, filed Sep. 8, 1997.

**STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT**

Not applicable.

**BACKGROUND OF THE INVENTION**

The present invention relates to the general field of telephone communications. In more particular, the invention relates to systems to assist telephone communications by those persons who are deaf, hard of hearing, or otherwise have impaired hearing capability.

Most modern human communications in both social and business environments takes place through sound communications. Yet within modern society there are many persons who have attenuated hearing capability. To assist those persons in making use of our telephonic communication system built for the hearing majority, there has been developed a system of telephone communication which has been principally used by the deaf community. That system makes use of a category of device known variously as a telecommunication device for the deaf (TDD), text telephone (TT) or teletype (TTY). Current TDDs are electronic devices consisting of a key board and a display as well as a specific type of modem, to acoustically or directly couple to the telephone line. Modern TDDs permit the user to type characters into their keyboard, with the character strings then encoded and transmitted over the telephone line to be displayed on the display of a communicating or remote TDD device.

Most TDD communication is conducted in an idiosyncratic code specific to the community of TDD users. This code, known as Baudot, evolved historically at a time when many telecommunication devices for the deaf were based on mechanical or electromechanical devices rather than the current technology based on digital electronic components. Accordingly, the Baudot protocol was constructed for a set of constraints which are no longer relevant to present day devices. The original Baudot protocol was a unidirectional or simplex system of communication conducted at 45.5 Baud. The conventional Baudot character set was a character set consisting of 5 bit characters and the system encodes the bits of those characters in a two-tonal system based on carrier tones of 1400 and 1800 Hertz.

The system of TDD communications is widely used and in fact has become indispensable to the deaf community throughout the industrialized world. Deaf persons extensively communicate with their neighbors and with other deaf and hearing people remotely, using the TDD system. In addition, systems have been developed to facilitate the exchange of communication between the deaf community and hearing users who do not have access to or utilize a TDD device. In the United States, telephone companies have set up a service referred to as a "relay." A relay, as the term is used herein, refers to a system of voice to TDD communication in which an operator, referred to as a "call assistant," serves as a human intermediary between a hearing user and a deaf person. Normally the call assistant wears a headset that communicates by voice with the hearing user and also has access to a TDD device which can communicate to the

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deaf user using a TDD appropriate protocol. In normal relay operations in the prior art, the call assistant types at a TDD keyboard the words which are voiced to her by the hearing user and then voices to the hearing user the words that the call assistant sees upon the display of his or her TDD. The call assistant serves, in essence, as an interpreting intermediary between the deaf person and the hearing person to translate from voice to digital electronic forms of communication.

A limitation in the effectiveness of current relay protocols is the necessity for the call assistant simply to type what is said. Typical call assistants can usually type reasonably well, typically in the range of 30 to 50 words per minute. While systems exist which permit the digital encoding of verbal communications at a faster rate, such as court stenography used in the legal system, such systems require extensive special training and are impractical for the numerous call assistants required by the relay systems in operation today. This limitation on the speed of conversion from speech to digital communications hampers the effective flow of communication in a relay call between the hearing person and a deaf person, since most hearing people speak at a rate which is higher than most call assistants can type. In addition, since conventional Baudot communications is unidirectional, the flow of conversation in a relay assisted communication session can be somewhat awkward. For example, first the hearing person must voice a statement or question. Then the calling assistant must type that statement or question, which is then transmitted at Baudot speeds, which are slower than normal human voice communication, to the deaf person. The deaf person waits until the entire statement or question is transmitted to him or her, after which he or she composes a response and types it in at his or her TDD. Then the communication flows backward to the call assistant who must voice to the hearing person what the deaf person has typed at his or her terminal. This process enables a degree of two-way communication between a deaf person and a hearing person, but the system tries the patience of the hearing person, since it is typically not conducted at a pace anywhere close to normal human communications.

**BRIEF SUMMARY OF THE INVENTION**

The present invention is summarized in that a relay system to facilitate the translation of information and communication between deaf and hearing persons includes a call assistant who re-voices the words of the hearing person which are spoken to the call assistant. The words spoken by the call assistant are recognized by a speech recognition computer program which has been trained to the voice pattern of the call assistant, such that the words are promptly translated into a high speed digital communication protocol. That high speed digital communication message is then transmitted electronically promptly by telephone to a visual display accessible to the deaf person.

It is an advantage of the invention described herein that the call assistant does not have to type most, if any, of the words spoken by the hearing person in the communication session so that the overall speed of communications from the hearing person to the deaf person is dramatically increased.

It is an object of the present invention that the design and utilization of a relay operated in accordance with the protocols described herein permits the introduction of small hand-held personal interpreter which will enable on the spot communications between deaf persons and hearing persons wherever the deaf persons might go.

Other objects, advantages and features of the present invention will become apparent from the following specification when taken in conjunction with the accompanying drawings.



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BRIEF DESCRIPTION OF THE SEVERAL  
VIEWS OF THE DRAWINGS

FIG. 1 is a schematic block diagram of a relay operated in accordance with the present invention.

FIG. 2 is an exterior view of a personal interpreter enabled by the relay of FIG. 1.

FIG. 3 is a schematic block diagram of the personal interpreter of FIG. 2.

DETAILED DESCRIPTION OF THE  
INVENTION

The present invention is directed toward a relay system, and a method for operating a relay system, so as to provide more conversation-like performance of voice to text interpreting for translating between deaf and hearing users. The improvements to the relay system and method of operating the relay described herein are applicable to the broad TDD community and to all the applications in which a relay is normally used. However, since the advantages of this system are most clear in view of its usefulness in enabling the advent of the truly portable personal interpreter for the deaf, a brief diversion to discuss what this device is and how the relay may enable its practical use is appropriate here.

Shown in FIG. 2 is an illustration of what a personal interpreter 10 can look like. This would be a small hand held device typically the size of a small hardbound book. It would have a keyboard of minimal size, but useable by a deaf person who can type. It would have a two to four line display, but the display could be any size that conveniently fits in the case of the device. The device would also have a key or switch which would initiate its operation.

Shown in FIG. 3 is a schematic block diagram of the internal mechanics of the personal interpreter. The personal interpreter keyboard shown at 12 and its display as shown at 14. Inside the interpreter itself is a microprocessor shown at 16. Not shown, but included within the personal interpreter, would be the appropriate memory and interface devices so as to allow the microprocessor to be programmed and to operate the personal interpreter and perform its functions, in a manner well known in the art. Also inside of the personal interpreter is a modem 18. The modem 18 is preferably a modem specifically designed for interface with the deaf telecommunications system. Most telecommunications with the deaf community are conducted using a Baudot type code. It is preferred that the mode be designed to use the enhanced form of Baudot communication known as "Turbo Code" (Ultratec), which is generally described in U.S. Pat. No. 5,432,837, No. 5,517,548, and 5,327,479, the disclosure of which is hereby incorporated by reference. It is even more preferred that the modem use a new variant of Turbo Code, one which uses higher carrier frequencies (in the range of 3000-3500 hertz) and a faster baud rate (over 100 baud). The output of the modem is preferably wired to a cellular telephone 20 included within the case of the personal interpreter 10. The cellular telephone 20 has a suitable antenna provided on it so that it may dial a cellular telephone network by radio frequency communications of the type normally conducted by cellular telephones. The personal interpreter also includes jack 28 to connect to a conventional wired or land-line telephone line as well. The personal interpreter also include a microphone 22 and a speaker 24. A filter 26 connects the speaker 24 and the microphone 22 to the telephone 20.

A brief description of the operation and functionality of the personal interpreter reveals the dramatic improvement

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and convenience and portability that this device gives to deaf people. A deaf user could go into an establishment, be it a government office or retail facility, in which there are only hearing persons. The deaf person would carry with him or her the personal interpreter 10. The deaf person would then place the personal interpreter 10 upon a counter or other surface, open it up, and press the initiation key or start button. The microprocessor 16 and modem 18 of the personal interpreter then power up and act in many ways like a normal TDD device operating in telecommunication standard, such as Turbo Code. However, there is one critical difference. The start or initiation key further causes the microprocessor 16 of the personal interpreter to dial a relay to set up a relay communication session and includes in its communication with the relay a message, using the enhanced command features available in advanced telecommunication protocols, such as Turbo Code, to initiate a special format of relay call adapted for the personal interpreter. Other codes which permit command functions, such as ASCII or CCITT, could also be used. The first operation is to activate the cellular telephone and direct the cellular telephone to dial the number of a relay operating in accordance with the method of the present invention. The cellular telephone dials the relay. Obviously, no wired connection is required to allow the cellular telephone function to establish a telephone connection with the remote relay, but alternatively the jack 28 to a conventional telephone line could be used. In addition, when the relay answers the telephone connection, the microprocessor 18 of the personal interpreter 10 is instructed to provide command codes to the remote relay. These command codes, a feature possible through the use of Turbo Code, permits the personal interpreter to tell the relay that this is a personal interpreter-type relay communication session. All of this can happen in the time necessary to initiate the cellular call, perhaps two to ten seconds.

Then, the deaf person can use the personal interpreter to translate words spoken by hearing persons in the presence of the personal interpreter into visually readable text. This is done by the personal interpreter 10 through an unseen relay. Words spoken by the hearing persons in the presence of the personal interpreter 10 are picked up by the microphone 22. Those words are then transmitted through the cellular telephone 20 to the remote relay. The relay, operating as will be described below, then immediately transmits back, in enhanced Turbo Code, a digital communication stream translating the words that were just spoken. The words are received by the modem 18, and the microprocessor 16 in the personal interpreter 10, and it is displayed promptly upon the display screen 14. If the deaf person can speak, he or she may then answer the hearing person with a spoken voice, or, the deaf person may alternatively type upon the keyboard 12. If the deaf user types on the keyboard 12, the personal interpreter transmits the communication by digital communication to the relay. The call assistant at the relay then reads and speaks the words typed by the deaf user which are transmitted to the speaker 22 contained in the personal interpreter into a voice communication which can be understood by the hearing users. The filter 26 filters out the digital communication frequencies from the sound generated by the speaker 22. Thus, in essence, the deaf person has a personal interpreter available to him or her at all times of the day or night wherever the deaf person is within the range of the cellular telephone system. Also, because the relay is preferably operating in accordance with the fast translation methodology described below, a very conversation-like feel can occur in the communication session between the deaf



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user and the hearing persons in the presence of the personal interpreter 10. In order for this communication session to be satisfactory to the hearing users as well as the deaf person, however, the relay must operate exceedingly rapidly. It is, in part, to meet the need for the exceeding rapidity of this conversational style of communication that the relay protocol of the present invention has been designed.

Shown in FIG. 1 is a relay intended to provide that capability. FIG. 1 is intended to show, in schematic fashion, how such a relay system can be set up. Shown at 32 is a telephone of a speaking person. Instead of a telephone of a speaking person, the input could also be the microphone of the personal translator 10 shown in FIGS. 2 and 3. The telephone of the speaking person 32 is connected through a telephone line 34 to a voice input buffer 36 at the relay. The telephone line 34 can be an actual physical land line, or two pair between the telephones, or can be a cellular or other over-the-air telephone linkage. The voice input buffer 36 is a simple buffer to ensure temporary capture of the voice in the event that the call assistant gets behind and needs to buffer or delay the voice of the speaking person. In any event, the output of the input voice buffer 36 is provided to a headset 40 where earphones 38 produce the sound of the remote speaking person in the ear of the call assistant. The call assistant is wearing the headset 40 and sitting at a computer 42 capable of communicating in an enhanced Baudot communication, such as Turbo Code or whatever other code protocol is being used. However, typically the call assistant does not type the words which the call assistant hears in his or her earphone 38. Instead, the call assistant then speaks the words which he or she hears in the earphones 38 into a microphone 39 in the headset 40. The microphone 39 on the headset 40 is connected to transmit the voice of the call assistant to the computer 42 at which the call assistant sits.

The computer 42 has been provided with a voice recognition software package which can recognize the spoken voice of the call assistant and immediately translate words spoken in that voice into a digital text communication stream. It is a limitation of currently available speech recognition software that the software must be trained or adapted to a particular user, before it can accurately transcribe what words the user speaks. Accordingly, it is envisioned here that the call assistant operates at a computer terminal which contains a copy of a voice recognition software package which is specifically trained to the voice of that particular call assistant. It is also important that the voice recognition system be capable of transcribing the words of the voice of the call assistant at the speed of a normal human communication. It has been found that a recently available commercial voice recognition package from Dragon Systems, known as "Naturally Speaking," is a voice recognition software which will accomplish this objective and which will translate to digital text spoken words of a user at the normal speeds of human communication in conversation when operating on conventional modern personal computers.

The computer terminal 42 of the call assistant then translates the text created by the voice recognition software to a modem 46 out through a telephone line 48 back to the display 50 located adjacent to the deaf person. The display 50 can be a conventional TDD located at the home of the remote deaf user, or can be the display 14 of the personal interpreter 10.

For reasons that will become apparent, there is also a connection from the microphone 39 of the headset 40 of the call assistant to the incoming telephone line 34 through a

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switch 52. The switch 52 can physically be an electrical switch located between the microphone 39 and the telephone lines 34 and the computer 42 or, as an alternative, it can be a software switch operating in the computer 42 which passes the voice of the user through to the telephone lines as voice, or not, under conditions which are selected by the call assistant, by choices he or she makes at the keyboard 44 of the computer 42. The switch 52 is functionally a single pole double throw switch although, of course, if this function is performed by the computer it will be a logical not a physical switch. In the simplest embodiment, the switch 52 is a simple single pole dual throw foot switch readily accessible to the call assistant which passes the voice of the call assistant from the microphone either out onto the telephone line 34 or to the computer 42.

It is a further enhancement to the operation of the relay constructed in accordance with the present invention that the earphones 38 have noise attenuating capability. Noise canceling earphones are commercially available today or, for this purpose, the computer 42 can be provided with noise canceling sound generation software which would create sound transmitted to the earphone 38 so as to cancel the sounds of the call assistant's own voice. The noise attenuation or cancellation avoids distracting the call assistant, since he or she would then be less distracted by the words that he or she has spoken, and thus would be less likely to be distracted from the concentration of the task of re-voicing the sounds of the voice heard in the call assistant's ear.

Similarly, another option which would be advantageous is that the software providing for the creation of the digital text string by voice recognition be buffered in its output flow to the modem 46. Before the computer 42 would pass the data on to the modem 46, the data would first be displayed on the computer screen of the computer 42 for review by the call assistant. The purpose of this option would be to permit the call assistant to use the keyboard to spell or correct hard-to-spell words, or to create corrections of any misinterpretations created by the voice recognition software, from the words spoken by the call assistant. It is anticipated that if such an option is utilized, it would require fairly infrequent use of the keyboard by the call assistant, since frequent use would clearly slow down the through-put of the communications.

The relay of FIG. 1 can operate with normal TDDs or with a personal interpreter as shown in FIGS. 2 and 3. In either event, the hearing person speaks in the telephone 32 and the words are transmitted through the telephone line 34 to the voice buffer 36. The voice buffer 36, again operating under the control of the call assistant, would buffer the voice signals from the hearing user as needed for the call assistant to keep up. The call assistant would hear the voice of the hearing user through the earpiece 38 and then would re-voice those same words into the microphone 39. The words that the user speaks into the microphone 39 would be fed to the computer 42 where the voice recognition software, trained to the voice of the call assistant, would translate those words into a digital text stream. The digital text stream would be turned into a digital communication stream by the modem 46 and passed on the telephone line 48 to a display 50 which can be observed by the deaf user. Experience has shown that using currently available technology the delay between the time the hearing user speaks into the telephone 32 and the time the words appear on the display 50 of the deaf user is a modest number of seconds.

In the reverse, when the deaf user types onto his or her telecommunication device, the digital signals are transmitted to the computer 42 which displays them for the call assistant



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who then voices those words into the microphone 39 which words are then transmitted onto the telephone line 34. Note that the presence of the switch 52 is therefore important in this mode. Since the voice of the call assistant serves two different functions in the operation of this system, the signal on the call assistant's voice must be switched so that the hearing user 32 only hears the voice for the communications which are intended to be directed to that person. The switch 52 allows for the voice of the call assistant only to be directed to the hearing person at the appropriate times.

Note that if the relay of FIG. 1 is used to facilitate a translation based on a personal interpreter such as that shown in FIGS. 2 and 3, there will be only one telephone line between the personal interpreter and the call assistant. In essence, in a modification of FIG. 1, the telephone 32 and the display 50 would both be within the personal interpreter 10. There would be only one telephone line, a cellular link, between the personal interpreter 10 and the call assistant. Note, therefore, that the voice of the call assistant and the digital communications created by the computer 42 would then travel on that same telephone linkage to and from the personal interpreter 10. It is therefore important for this embodiment that the personal interpreter 10 have appropriate filtering (i.e. the filter 26) to filter out the digital communication carrier frequencies of the digital communication protocol, so that they are not heard by hearing listeners in the presence of the personal interpreter 10. The telephone line must still carry voice signals, however, so that the spoken words articulated by the call assistant in response to digital instructions from the deaf user can be properly broadcast by the speaker contained within the personal interpreter.

The provision for filtering of the digital frequencies can be done in any number of ways with two being the principal preferred methodologies. If Turbo Baudot communications are conducted at the conventional Baudot frequencies of 1400 and 1800 Hertz, the personal interpreter 10 could be provided with notch filters 26 to filter out signals at those particular frequencies. It has been found that such notch filters still permit the transmission of audible and understandable human speech, even if they filter at those particular frequencies. As an alternative, it is possible to change the Baudot frequencies to those which are much higher, such as frequencies of 3000 to 3500 Hertz. If this alternative is selected, the personal interpreter 10 is then provided with a low pass filter which permits low frequency sounds to go to the speaker to be broadcast into the environment of the personal interpreter, while high frequencies are excluded.

It has been found in actual human tests that utilizing the revoicing methodology combined with speech recognition by the call assistant results in a throughput of communication two to four times faster than the typing which can be achieved by a normal call assistant operating a keyboard. This is a dramatic improvement in the social acceptability of deaf to hearing person translation systems. While deaf users

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are accustomed to the delays inherent in TDD communications, hearing users are not. The provision for the faster throughput through a relay system such as provided by the relay of FIG. 1 allows for more conversation-like interchange between deaf persons and hearing persons than was heretofore possible. The relay of FIG. 1 also enables, for the first time, a personal interpreter of the type illustrated at 10 in FIGS. 2 and 3 to be available to deaf users who can then get on the spot interpreting virtually anywhere. This offers a freedom and functionality to deaf users which was not heretofore possible in the art.

It is to be understood that the present invention is not limited to the particular illustrations and embodiments disclosed above, but embraces all such modified forms thereof as come within the scope of the following claims.

I claim:

1. A relay to facilitate communication between a deaf person using a telecommunication device for the deaf and a hearing person through a telephone system and using a call assistant, the relay comprising

- a speaker connected to receive voice communications from the telephone system and transmit those voice communications to the ear of the call assistant;
- a microphone connected to pickup voice spoken by the call assistant;
- a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream; and
- a modem connected to the digital computer to transit the digital text stream created by the computer over the telephone system to the telecommunication device for the deaf of the deaf person.

2. A relay to facilitate communication between a digital telecommunication device and a hearing person through a telephone system and using a call assistant, the relay comprising

- a speaker connected to receive voice communications from the telephone system and transmit those voice communications to the ear of the call assistant;
- a microphone connected to pickup voice spoken by the call assistant;
- a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream; and
- a modem connected to the digital computer to transit the digital text stream created by the computer over the telephone system to the telecommunication device.

\* \* \* \* \*

[Trials@uspto.gov](mailto:Trials@uspto.gov)  
571-272-7822

Paper 76  
Entered: March 3, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CAPTIONCALL, L.L.C.,  
Petitioner,

v.

ULTRATEC, INC.,  
Patent Owner.

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Case IPR2013-00541  
Patent 5,909,482

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Before WILLIAM V. SAINDON, BARBARA A. BENOIT, and  
LYNNE E. PETTIGREW, *Administrative Patent Judges*.

BENOIT, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*



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## I. INTRODUCTION

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6(c). This final written decision is issued pursuant to under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1-15 of U.S. Patent No. 5,909,482 (Ex. 1001; “the ’482 patent”) are unpatentable.

### A. Procedural History

CaptionCall, L.L.C. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–15 of the ’482 patent pursuant to 35 U.S.C. §§ 311-319. Paper 1 (“Pet.”). Patent Owner, Ultratec, Inc., did not file a preliminary response. On March 5, 2014, pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review for claims 1-15 of the ’482 patent on the following grounds of unpatentability:

Reference(s)	Basis	Challenged Claims
Ryan <sup>1</sup>	§ 102(e)	1 and 5
Wycherley <sup>2</sup> and Yamamoto <sup>3</sup>	§ 103(a)	1 and 5
Wycherley, Yamamoto, and Jones <sup>4</sup>	§ 103(a)	2, 7, and 8

<sup>1</sup> U.S. Patent No. 5,809,112 (Ex. 1004) (“Ryan”).

<sup>2</sup> U.S. Patent No. 5,163,081 (Ex. 1002) (“Wycherley”).

<sup>3</sup> Seiichi Yamamoto & Masanobu Fujioka, *New Applications of Voice Recognition*, Proc. JASJ Conf. (March 1996) (Ex. 1005). Unless indicated otherwise, all subsequent citations to Yamamoto refer to its English language translation (Ex. 1006).

<sup>4</sup> PCT International Publication No. WO95/00946 (Ex. 1008) (“Jones”).

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Reference(s)	Basis	Challenged Claims
Wycherley, Yamamoto, and Choi <sup>5</sup>	§ 103(a)	3, 10, and 11
Wycherley, Yamamoto, and Vasile <sup>6</sup>	§ 103(a)	4, 13, and 14
Wycherley, Yamamoto, and Liebermann <sup>7</sup>	§ 103(a)	6
Wycherley, Yamamoto, Jones, and Liebermann	§ 103(a)	9
Wycherley, Yamamoto, Choi, and Liebermann	§ 103(a)	12
Wycherley, Yamamoto, Vasile, and Liebermann	§ 103(a)	15

Paper 6 (“Inst. Dec.”).

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 28; “PO Resp.”), and Petitioner filed a Reply (Paper 33; “Reply”). Patent Owner also filed Motions to Exclude Evidence. Paper 43 (“PO Mot. to Exc. Occhiogrosso”); Paper 44 (“PO Mot. to Exc. Yamamoto”). Petitioner filed a combined Opposition (Paper 53; “Pet. Opp. to Mots. to Exc.”) to Patent Owner’s Motions, and Patent Owner filed a Reply to Petitioner’s Opposition (Paper 56; “PO Reply to Opp. to Mots. to Exc.”). Also, Petitioner filed a Motion for Leave to File Supplemental Evidence Regarding Yamamoto (Paper 50), and Patent Owner filed an Opposition to Petitioner’s Motion (Paper 55). In response to the Board’s

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<sup>5</sup> W. Choi et al., *Splitting and Routing Audio Signals in Systems with Speech Recognition*, IBM TECHNICAL DISCLOSURE BULLETIN, Vol. 38, No. 12, 503-04 (December 1995) (Ex. 1009) (“Choi”).

<sup>6</sup> U.S. Patent No. 5,289,523 (Ex. 1003) (“Vasile”).

<sup>7</sup> U.S. Patent No. 5,982,853 (Ex. 1010) (“Liebermann”).

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order (Paper 61), Petitioner filed additional briefing (Paper 63) regarding the public availability of Yamamoto. In turn, Patent Owner filed a response (Paper 65), to which Petitioner filed a Reply (Paper 66).

An oral hearing was held on November 19, 2014.<sup>8</sup>

### *B. Related Proceedings*

Petitioner represents that the '482 patent was asserted against its parent company in *Ultratec, Inc. v. Sorenson Communications, Inc.*, No. 13-CV-00346 (W.D. Wis.). Pet. 2. Petitioner also represents that in the same district court proceeding Patent Owner asserted the following patents at issue in *inter partes* reviews—U.S. Patent No. 6,233,314 (Case IPR2013-00540), U.S. Patent No. 7,319,740 (Case IPR2013-00542), U.S. Patent No. 7,555,104 (Case IPR2013-00543), U.S. Patent No. 8,213,578 (Case IPR2013-00544), U.S. Patent No. 6,594,346 (Case IPR2013-00545), U.S. Patent No. 6,603,835 (Case IPR2013-00549), and U.S. Patent No. 7,003,082 (Case IPR2013-00550).

### *C. The '482 Patent*

The '482 patent discusses a way to assist deaf, hard of hearing, or otherwise hearing impaired individuals to use telephones. Ex. 1001, 1:14-17. Conventional assistance uses a device having a keyboard and display,

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<sup>8</sup> This proceeding, as well as IPR2013-00540, IPR2013-00542, IPR2013-00543, IPR2013-00544, IPR2013-00545, IPR2013-00549, and IPR2013-00550 involve the same parties and some similar issues. The oral arguments for all eight reviews were merged and conducted at the same time. A transcript of the oral hearing is included in the record as Paper 75.

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which may be called a text telephone (TT), a teletype (TTY), or a telecommunication device for the deaf (TDD). *Id.* at 1:26-29. A human intermediary facilitates communication between a hearing user and a hearing impaired user by communicating by voice with the hearing user and using a TDD to communicate with the hearing impaired user. *Id.* at 1:60-67. The system of voice-to-TDD communication used by the human intermediary (called an operator or call assistant) is referred to as a relay. *Id.* at 1:60-64.

The '482 patent indicates the effectiveness of relay systems is limited by the speed at which a call assistant can type the words said by the hearing user. *Id.* at 2:8-21. The '482 patent relates to a relay system to improve performance of voice-to-text interpretation for translating between hearing impaired and hearing users. *Id.* at 3:13-16. Instead of typing the hearing user's words, the call assistant speaks those words into a microphone that transmits the voice of the call assistant to a computer with voice recognition software that is trained specifically to the voice of the call assistant. *Id.* at 5:28-47. The computer translates the words of the call assistant to digital text, which is sent to a display of the hearing impaired user. *Id.* at 5:30-64.

#### *D. Illustrative Claims*

Claims 1, 7, 10, and 13 are independent claims. Claims 1 and 7 are illustrative of the claims at issue and read as follows:

1. A method of operating a relay system using a call assistant to facilitate communication between a deaf person and a hearing person by telephone comprising the steps of  
transmitting the voice of the hearing person when speaking to the ear of the call assistant;

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the call assistant speaking in voice the same words that the call assistant hears spoken by the hearing person into a microphone connected to a digital computer;

the digital computer using voice recognition computer software trained to the voice of the call assistant to translate the words of the voice spoken by the call assistant into a digital text message stream containing the words spoken by the call assistant;

transmitting the digital text message stream created by the computer by telephone connection to a telecommunication device within sight of the deaf person; and

the telecommunication device displaying in visually readable text the words in the digital text message stream.

*Id.* at 8:4-21.

7. A relay to facilitate communication between a deaf person using a telecommunication device for the deaf and a hearing person through a telephone system and using a call assistant, the relay comprising

a speaker connected to receive voice communications from the telephone system and transmit those voice communications to the ear of the call assistant;

a microphone connected to pickup voice spoken by the call assistant;

a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream;

a modem to transit the digital text stream created by the computer over the telephone system to the telecommunication device for the deaf of the deaf person; and

noise attenuating means responsive to the voice spoken by the call assistant and connected to the speaker to attenuate

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the noise of the voice of the call assistant from the sounds heard  
in the ear of the call assistant.

*Id.* at 8:48-9:2.

## II. ANALYSIS

### A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, No. 2014-1301, slip op. at 11–19 (Fed. Cir. Feb. 4, 2015). Under the broadest reasonable construction standard, claim terms are presumed to be given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An inventor may provide a meaning for a term that is different from its ordinary meaning by defining the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

We construe “the digital computer using a voice recognition computer software trained to the voice of the call assistant to translate the words of the voice spoken by the call assistant into a digital text stream containing the words spoken by the call assistant,” recited in independent claim 1, and “a digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream,” recited

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in independent claims 7, 10, and 13, in accordance with these principles. We also construe “noise attenuating means” recited in independent claim 7. No other claim terms require express construction.

*1. “trained to the voice of the call assistant”*

Neither party expressly proposes a construction for “trained to the voice of the call assistant,” recited in each of the independent claims. *See* Pet. 5-6; PO Resp. 9-13; Reply 2. In their dispute over the teachings of the asserted prior art, however, the parties articulate different views in how the term should be construed. Patent Owner construes “trained to the voice of the call assistant” to require training to recognize individual voices (PO Resp. 28-29), presumably trained to the voice of one and only one call assistant and precluding training for a type of speech used by a group of people (such as a regional accent) that could apply to more than one call assistant. Patent Owner also seeks to construe “trained to the voice of the call assistant” as having a temporal constraint so as to preclude training at the time when the voice recognition computer software package is “*designed* in advance of implementation at the source code level.” *Id.* at 27. According to Patent Owner, “trained to the voice of the call assistant” precludes software that is “built to” recognize the voice of a particular agent. *Id.* at 27-28. Petitioner disagrees. Reply 3-4.

The Specification of the ’482 patent does not set forth a special definition for “training.” The Specification, however, in its “Brief Summary of the Invention” indicates “a speech recognition computer program which has been trained to the voice *pattern* of the call assistant.” Ex. 1001, 2:46-48

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(emphasis added). In the context of describing the relay shown in Figure 1, the Specification describes “the call assistant operat[ing] at a computer terminal which contains a copy of a voice recognition software package which is specifically trained to the voice of that *particular* call assistant.” *Id.* at 5:44-47 (emphasis added). The Specification, however, does not indicate expressly that the voice recognition software is trained to the voice of only that particular call assistant or otherwise indicate the voice recognition software is trained for the voice of only one call assistant.

As such, the Specification contemplates software trained to “a voice pattern of the call assistant” as well as software “specifically trained to the voice of [a] particular call assistant.” Further, the Specification indicates, in those passages, that the voice recognition software package is trained but does not indicate when or how the training occurs. *Id.* at 2:46-48, 5:44-47.

Patent Owner, relying on its declarant Mr. Paul W. Ludwick, asserts software “designed” is not software that is “trained to recognize individual voices.” PO Resp. 27. According to Mr. Ludwick, a person of ordinary skill in the art would not have understood “trained” software to include “designed” software because technology to train software to recognize individual voices did not exist in 1994 and was not used in telecommunications relay service at that time. *Id.* (citing Ex. 2010 ¶ 22). We also note here that the technology available in 1994 has little probative value here because the year of invention is 1997 for the reasons discussed below.



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We give claim language its broadest reasonable construction in light of the specification of the patent in which it appears. Thus, we will not limit “trained to the voice of the call assistant” to require training to the voice of only one particular call assistant, because the claim language encompasses the invention as disclosed in the Specification—software trained to a voice *pattern* of a call assistant. Ex. 1001, 2:41-49 (“Summary of the Invention”). Nor will we limit “trained to the voice of the call assistant” to a particular time in which the training must occur or to a particular manner of training that is not found in the claims nor the Specification.

Accordingly, “trained to the voice of the call assistant” does not preclude voice recognition software that is designed or built in advance of implementation at the source code level to the voice pattern of a call assistant. Nor is “trained to the voice of the call assistant” limited to training to the voice of one and only one call assistant.

2. *“digital computer using a voice recognition computer software trained to the voice of the call assistant” and “digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant”*

Neither party expressly proposes a construction for “digital computer using a voice recognition computer software trained to the voice of the call assistant,” recited in claim 1, or “digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant,” recited in claims 7, 10, and 13. *See* Pet. 5-6; PO Resp. 9-13; Reply 2. In the dispute over the teachings of the asserted prior art references, however, Patent Owner contends, based on the testimony of

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Mr. Ludwick, that the claimed voice recognition software must be “running on the call assistant’s workstation—e.g., not remotely or virtually running on or from a server or other computer.” PO Resp. 25-26 (citing Ex. 2010 ¶¶ 102-105).

Mr. Ludwick explains that, because the claim requires the call assistant to speak into a microphone connected to the computer programmed to use a voice recognition computer software package and because of advantages of such an arrangement, the claimed software package must reside on the claimed computer to which the microphone is connected. Ex. 2010 ¶¶ 103-105; *see also* PO Resp. 25-26.

Independent claim 1 recites “the digital computer using voice recognition computer software” and claims 7, 10, and 13 each requires the computer “to use a voice recognition computer software package.” These claims do not require expressly the voice recognition computer software to be stored on the computer using the voice recognition computer software or on the computer programmed to use the software package. Patent Owner, based on Mr. Ludwick’s testimony, acknowledges the software package may be stored other than on the call assistant’s computer. PO Resp. 26 (indicating a terminal may be able to transmit a voice signal to be converted to text by a server or other computer located remotely from the call assistant’s computer) (citing Ex. 2010 ¶¶ 106-107). Notably, neither Patent Owner nor Mr. Ludwick addresses sufficiently how a person of ordinary skill in the art would understand the limitation “the digital computer using the voice recognition computer software” or the limitation “digital

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computer . . . programmed *to use*” a software package to require the software package to be stored on the computer using, or programmed to use, the software package.

Thus, we will not construe “the digital computer using voice recognition computer software trained to the voice of the call assistant” or “a digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant” as requiring the software package to be stored on the computer using, or programmed to use, the software.

3. *“noise attenuating means . . . to attenuate the noise of the voice of the call assistant from the sounds heard in the ear of the call assistant”*

Petitioner asserts “noise attenuating means responsive to the voice spoken by the call assistant and connected to the speaker to attenuate the noise of the voice of the call assistant from the sounds heard in the ear of the call assistant,” recited in independent claim 7, should be construed as a means-plus-function limitation under 35 U.S.C. § 112, sixth paragraph. Pet. 6. Petitioner identifies “noise canceling earphones, a computer with noise canceling sound generation software, or equivalents thereof” as corresponding structure in the Specification. *Id.* (citing Ex. 1001, 6:16-23).

Construing a means-plus-function limitation requires first defining the particular function of the limitation and then identifying, in the specification, the structure that performs the claimed function. *Golight, Inc. v. Wal-Mart Stores Inc.*, 355 F.3d 1327, 1333-34 (Fed. Cir. 2004).

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We agree with Petitioner (Pet. 6) that “noise attenuating means” is a means-plus-function limitation because: (1) the limitation uses the word “means,” (2) the term in the limitation is modified by functional language (“to attenuate the noise of the voice of the call assistant from the sounds heard in the ear of the call assistant”), and (3) the term is not modified by any structure recited in the claim for performing the claimed function. *See Flo Healthcare Solutions, LLC v. Kappos*, 697 F.3d 1367, 1373 (Fed. Cir. 2012). Although the limitation recites “connected to the speaker,” this structure does not perform the claimed function of attenuating noise. *Id.*

The Specification of the ’482 patent discloses earphones 38, which “produce the sound of the remote speaking person in the ear of the call assistant” (Ex. 1001, 5:23-24) and “have noise attenuating capability” (*id.* at 6:18). The Specification also discloses that “computer 42 can be provided with noise canceling sound generation software which would create sound transmitted to the earphone 38 so as to cancel the sounds of the call assistant’s own voice.” *Id.* at 6:20-23. The Specification further indicates that “noise attenuation or cancellation avoids distracting the call assistant, since he or she would then be less distracted by the words that he or she has spoken.” *Id.* at 6:23-26.

As such, the Specification of the ’482 patent discloses that earphones 38 and computer 42 provided with noise canceling sound generation software are structures that perform the function of “noise attenuating means”—that is, the function “to attenuate the noise of the voice of the call assistant from the sounds heard in the ear of the call assistant.”

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For these reasons, in the Decision to Institute, the Board construed “noise attenuating means . . . to attenuate the noise of the voice of the call assistant from the sounds heard in the ear of the call assistant” in claim 7 as follows:

Function: “to attenuate the noise of the voice of the call assistant from the sounds heard in the ear of the call assistant.”

Corresponding structure: earphones 38 or computer 42 provided with noise canceling sound generation software.

Inst. Dec. 7-9. We also determined that “noise attenuating means” includes “noise canceling earphones, a computer with noise canceling sound generation software, or equivalents thereof,” as asserted by Petitioner (Pet. 6). *Id.* at 9.

Neither party challenges our preliminary construction of “noise attenuating means” set forth in our Decision to Institute. *See* PO Resp. 9-13; Reply 2. Having considered whether the construction set forth in the Decision to Institute should be changed in light of evidence introduced during trial, we are not persuaded any modification is necessary. Therefore, we maintain the construction of “noise attenuating means . . . to attenuate the noise of the voice of the call assistant from the sounds heard in the ear of the call assistant,” as indicated above.

#### *B. Principles of Law*

To prevail in challenging claims 1-15 of the ’482 patent, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

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A claim is anticipated if a single prior art reference either expressly or inherently discloses every limitation of the claim. *Orion IP, LLC v. Hyundai Motor Am.*, 605 F.3d 967, 975 (Fed. Cir. 2010). To establish inherent disclosure, the evidence must show that a feature is necessarily described in the reference. *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999). To anticipate, a reference also “must enable one of ordinary skill in the art to make the invention without undue experimentation.” *Impax Labs., Inc. v. Aventis Pharm., Inc.*, 545 F.3d 1312, 1314 (Fed. Cir. 2008). To determine whether “undue experimentation” is required, various factors are examined, including (1) the quantity of experimentation; (2) the amount of direction or guidance present; (3) the presence or absence of working examples; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of those in the art; (7) the predictability or unpredictability of the art; and (8) the breadth of the claims. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988); *see also Impax Labs.*, 545 F.3d at 1314-15 (indicating the Wands factors should be applied to a determination whether a prior art reference is enabled).

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time of the invention to a person having ordinary skill in the art. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the

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prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). The level of ordinary skill in the art is reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

*C. Patent Owner's Motion to Exclude Testimony by Mr. Occhiogrosso*

Patent Owner seeks to exclude the testimony of Mr. Benedict Occhiogrosso (Exs. 1014, 1053, 2006, 2007, and 2017) on the theory that he is not qualified as an expert under Federal Rule of Evidence 702 ("FRE 702").<sup>9,10</sup> PO Mot. to Exc. Occhiogrosso; PO Resp. 5-9. FRE 702 provides that a witness qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion if (a) the expert's knowledge will help the trier of fact to understand the evidence or to determine a fact in issue, (b) the testimony is based upon sufficient facts or data, (c) the testimony is the product of reliable principles and

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<sup>9</sup> Patent Owner also seeks to *exclude* Mr. Occhiogrosso's testimony under 37 C.F.R. § 42.65. PO Mot. to Exc. Occhiogrosso 1. Rule 42.65, however, addresses (a) the weight given to expert testimony that does not disclose underlying facts or data on which the opinion is based, (b) the showing required if a party seeks to rely on a technical test or data from such a test, and (c) the exclusion of expert testimony on United States patent law or patent examination practice. As such, Rule 42.65 does not apply to a determination whether to exclude Mr. Occhiogrosso's testimony.

<sup>10</sup> With some enumerated exceptions, the Federal Rules of Evidence apply to an *inter partes* review. 37 C.F.R. § 42.62.

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methods, and (d) the witness has applied the principles and methods reliably to the facts of the case.

Testimony on the issue of unpatentability proffered by a witness who is not “qualified in the pertinent art” generally is not admissible under FRE 702. *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1363-64 (Fed. Cir. 2008). In determining who is qualified in the pertinent art under FRE 702, we need not find a complete overlap between the witness’s technical qualifications and the problem confronting the inventor or the field of endeavor. *See SEB S.A. v. Montgomery Ward & Co., Inc.*, 594 F.3d 1360, 1372-73 (Fed. Cir. 2010) (upholding admission of the testimony of an expert who admittedly lacked expertise in the design of the patented invention, but had experience with materials selected for use in the invention); *Mytee Prods., Inc. v. Harris Research, Inc.*, 439 Fed. App’x 882, 886–87 (Fed. Cir. 2011) (non-precedential) (upholding admission of the testimony of an expert who “had experience relevant to the field of the invention,” despite admission that he was not a person of ordinary skill in the art).

Patent Owner contends that, to qualify as an expert under FRE 702, Mr. Occhiogrosso must be a person of ordinary skill in the art, and that Mr. Occhiogrosso is not a person of ordinary skill in the art because “he is an information technology (“IT”) generalist” and does not have “any specific experience in the context of [telecommunications relay systems] for the deal and the HOH [hear of hearing].” PO Mot. to Exc. Occhiogrosso 5; *see also id.* at 1-4 (discussing the definition of a person of ordinary skill in



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the art); 5-7 (discussing Mr. Occhiogrosso's experience with respect to these factors). Petitioner responds that Patent Owner's definition of the level of ordinary skill in the art conflates a requirement for skill in the relevant technical art ("telecommunications systems [having] voice-to-text transcription") with skill in one particular commercial sector that applies that technical art ("telecommunications services *specifically* designed for the deaf or hard of hearing"). Pet. Opp. to Mots. Exc. 1, 3-4.

Patent Owner's arguments are unpersuasive at the outset because, to testify as an expert under FRE 702, a person need not be a person of ordinary skill in the art, but rather "qualified in the pertinent art." *Sundance*, 550 F.3d at 1363-64; *SEB*, 594 F.3d at 1372-73; *Mytee*, 439 Fed. App'x at 886-87. Patent Owner's arguments are also unpersuasive because they attempt to constrict the "pertinent art," i.e., the pertinent technology, to a particular subset of individuals who use the pertinent technology, rather than the pertinent technology itself. *See* Pet. Opp. to Mots. to Exc. 4-5 (arguing that the problems in the pertinent art are not "uniquely related" to the deaf and hard-of-hearing).

Moreover, Patent Owner indicates elsewhere that the relevant field of art is telecommunication technologies. *See* PO Resp. 19 n.2 (Patent Owner indicating its declarant "Mr. Ludwick indisputably is [a person of ordinary skill in the art] in telecommunications technologies, which is the relevant field of art" to opine on speech recognition software for use in telecommunication relay service settings). Petitioner similarly indicates the relevant field is telecommunication technologies. Pet. Opp. to Mots. to

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Exc. 6 (“Mr. Occhiogrosso’s qualifications should be analyzed with respect to the pertinent art of telecommunication technologies in which an intermediary facilitates voice-to-text transcription.”).

We agree that the pertinent art is telecommunication technologies. The ’482 patent states that the “present invention relates to the general field of telephone communications.” Ex. 1001, 1:14-15. The ’482 patent focuses on a particular application of that technology: people who need assistance in using telecommunications devices. *Id.* at 1:15-2:8 (describing various prior art assistive technologies). The ’482 patent also summarizes the invention as the use of a speech recognition computer program trained to the voice of the call assistant to translate promptly the words spoken by an intermediary call assistant into a “high speed digital communication message [that] is then transmitted electronically promptly by telephone to a visual display accessible to the” hearing-assisted user. *Id.* at 2:41-52.

The qualifications of Mr. Occhiogrosso, as summarized in his curriculum vitae (Ex. 1015), qualify him to give expert testimony on the subject of telecommunication technologies. He possesses a Bachelor of Science in Electrical Engineering and a Master of Science in Electrical Engineering. Ex. 1015, 2. Mr. Occhiogrosso testifies that he has more than thirty years of experience in the field of telecommunications and information technology, and he has planned, designed, implemented, and managed large scale projects involving wired and wireless communication systems, including transmission of voice and data. Ex. 1014 ¶ 7; *see also* Ex. 1015,

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2-6 (detailing Mr. Occhiogrosso's enterprise consulting engagements, research and development, and wireless experience).

Moreover, to the extent Mr. Occhiogrosso is more familiar with general telecommunications technology and less familiar with voice-to-text or its application to the deaf or hearing-impaired, or to the extent that Mr. Occhiogrosso's testimony is inconsistent or unsupported, we weigh Mr. Occhiogrosso's testimony accordingly, taking into account the extent of his expertise in these areas. *See, e.g., Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) (holding the Board has discretion to give more weight to one item of evidence over another "unless no reasonable trier of fact could have done so"); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) ("[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.").

Patent Owner also contends that Mr. Occhiogrosso's testimony fails to identify the level of skill in the art in his Declaration (Ex. 1014), fails to give any consideration to what one of ordinary skill in the art would have known or not known, is unsupported and unreliable, and does not consider secondary considerations. PO Mot. to Exc. Occhiogrosso 8-9; PO Resp. 7-8; PO Reply to Opp. to Mots. to Exc. 3. Petitioner counters that Mr. Occhiogrosso "consistently applied his definition of a [person of ordinary skill in the art] throughout his testimony" and, in a supplemental declaration, Mr. Occhiogrosso "made explicit the level of ordinary skill he applied" in Exhibit 1014. Pet. Opp. to Mots. to Exc. 11-12.

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Patent Owner's argument goes more to the weight we should accord Mr. Occhiogrosso's testimony, rather than its admissibility. It is within our discretion to assign the appropriate weight to the testimony offered by Mr. Occhiogrosso. *See, e.g., Yorkey*, 601 F.3d at 1284. Moreover, Mr. Occhiogrosso provided a supplemental declaration identifying the level of skill in the art and confirming his opinion presented in the earlier declaration (Ex. 1014) in view of the level of skill in the art. *See* Ex. 1053 ¶¶ 12-17, 19. Mr. Occhiogrosso's testimony also confirmed his legal understanding of anticipation and obviousness, including secondary considerations. *See id.* ¶¶ 20-26.

Under the totality of these circumstances, we decline to exclude the testimony of Mr. Occhiogrosso. Accordingly, Patent Owner's Motion to Exclude to Mr. Occhiogrosso's testimony (Paper 43) is *denied*.

#### *D. Anticipation by Ryan*

Petitioner asserts that independent claim 1 and its dependent claim 5 are unpatentable under 35 U.S.C. § 102(e) as anticipated by Ryan. Pet. 10, 13-17. Patent Owner challenges Petitioner's assertion. PO Resp. 16-38.

##### *1. Summary of Ryan*

Ryan discloses a telecommunications relay system with a relay interface for communicating between a standard telephone set and a TDD for a hearing impaired person. Ex. 1004, Abstract. Figure 1 of Ryan is a diagram of the telecommunications relay system and is set forth below:

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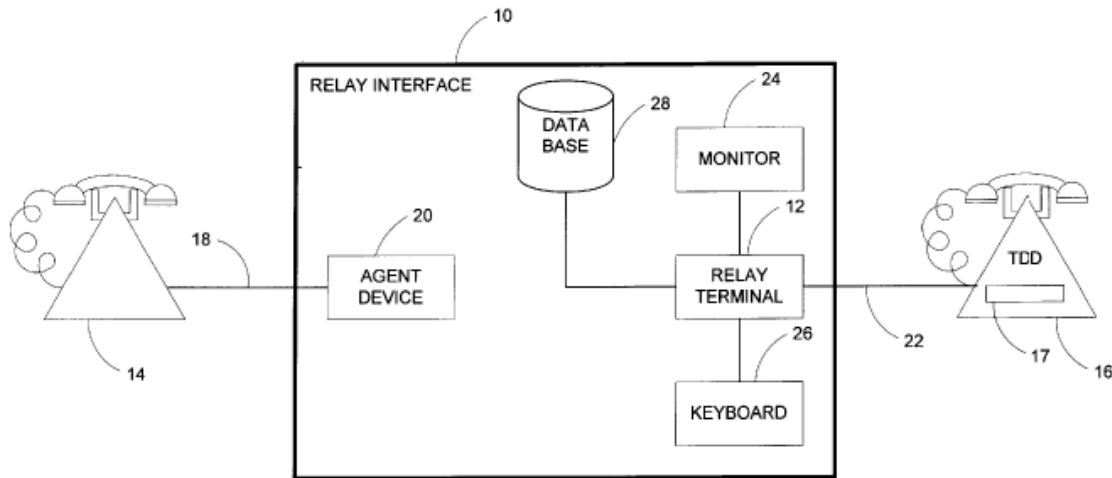


FIG. 1

As shown in Figure 1, Ryan's telecommunications relay interface 10 includes operator/relay terminal 12 and couples standard telephone 14 with TDD 16. Ex. 1004, 3:34-35, 43-51. An operator or relay agent typically is responsible for manipulating relay terminal 12 to relay messages between telephone 14 and TDD 16. Ryan indicates, however, that speech recognition software could be used to automate the relay function so that an operator or relay agent would not be required. *Id.* at 4:19-24. Ryan specifically describes using speech recognition software at agent device 20 to interpret a voice message from a caller at telephone 14 and convert the message from a voice format to a data format. *Id.* at 4:24-27. Ryan further indicates:

If the software is specifically designed to recognize the voice of particular relay agents, the accuracy of the relay service may be improved by having one of these agents listen to the caller and repeat the voice message into a terminal adapted to convert the agent's voice message into a data message.

*Id.* at 4:33-38.

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*2. Ryan Is Prior Art*

Ryan issued on September 15, 1998, with a filing date of July 3, 1996, and is entitled to the benefit of the filing date of its parent application, October 18, 1994. Ex. 1004. Thus, Petitioner contends Ryan is prior art under 35 U.S.C. § 102(e). Pet. 10. Patent Owner contends that Ryan is not prior art under § 102(e) because it is not enabled. PO Resp. 16-25.

Under § 102(e), Ryan must be enabled prior to the date of invention of the '482 patent. *See* 35 U.S.C. § 102 (Section 102 indicates that “[a] person shall be entitled to a patent unless— . . . (e) the invention was described in . . . (2) a patent granted on an application for patent . . . filed in the United States before the invention by the applicant for patent.”). The '482 patent issued from an application filed on September 8, 1997. Accordingly, the earliest possible date of invention of the claims of the '482 patent is presumed to be September 8, 1997.

As an initial matter, we address Patent Owner's assertion of an earlier date of invention—June 23, 1997—for claim 1 of the '482 patent. PO Resp. 23-24. Patent Owner relies on a journal entry from August 5, 1997 indicating “the [call assistant] repeats what voice person says” (Ex. 2011 ¶¶ 3-4) and two declarations regarding the purchase of commercial software (i.e., IBM ViaVoice) (Ex. 2012 ¶¶ 5-10; Ex. 2013 ¶¶ 7-9). PO Resp. 23. The declarations indicate additionally that IBM ViaVoice was released in August 1997 and the patent application was filed shortly thereafter on September 8, 1997. Ex. 2012 ¶¶ 5-10; Ex. 2013 ¶¶ 7-9.

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Patent Owner's earliest proffered evidence dates back only to August 5, 1997, not June 23, 1997. Moreover, Patent Owner has not attempted to show diligence in reduction to practice.<sup>11</sup> Thus, we do not find that Patent Owner has established a date of invention for the claims prior to September 8, 1997.

We now turn to whether the portion of Ryan relied on by Petitioner as disclosing the recited “digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream” was enabled prior to the relevant time. Initially, there is a presumption that a prior art reference is enabled. *See In re Antor Media*, 689 F.3d 1282, 1287-1288 (Fed. Cir. 2012); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1355 (Fed. Cir. 2003).

The parties agree that commercial voice recognition software available from Dragon Systems, called “Naturally Speaking” (and sometimes referred to as “Dragon Naturally Speaking”), enabled “a digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream.” PO Resp. 24 (citing Exs. 2011, 2012, and 2013); Reply 4. There is no dispute that

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<sup>11</sup> *See Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1577 (Fed. Cir. 1996) (holding that the first to conceive “may date his patentable invention back to the time of its conception, if he connects the conception with its reduction to practice by reasonable diligence on his part, so that they are substantially one continuous act” (internal citation and quotations omitted)).

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Dragon Naturally Speaking was available to the public on June 23, 1997. PO Resp. 23 (citing Exs. 2011, 2012, and 2013); Reply 4. Moreover, the '482 patent indicates Dragon Naturally Speaking was available commercially. Ex. 1001, 5:50-57 (stating “a recently available commercial voice recognition package from Dragon Systems, known as ‘Naturally Speaking,’ is a voice recognition software which will . . . translate to digital text spoken words of a user at the normal speeds of human communication in conversation when operating on conventional modern personal computers”).

Weighing the *Wands* factors, we determine that at least the state of the prior art (including commercial availability of Dragon Naturally Speaking), the breadth of the claims (“a digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream”), and the predictability of the telecommunications art support a finding that Ryan is enabled as of June 23, 1997. *See Wands*, 858 F.2d at 737.

Patent Owner argues that Ryan does not anticipate claims 1 and 5 under § 102(e) because Ryan’s disclosure of speech recognition software (Ex. 1004, 4:19-38) was not enabled in 1994, the earliest effective filing date claimed by Ryan. PO Resp. 16-25. We do not agree with Patent Owner that, to anticipate under 35 U.S.C. § 102(e), a reference must be enabled as of the date of the reference’s earliest claimed priority date. *Id.* at 16-25.



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First, “[e]nablement of an anticipatory reference may be demonstrated by a later reference.” *Bristol-Myers Squibb Co.*, 246 F.3d at 1379. An anticipatory reference under § 102(b) is enabled if it can be shown that the claimed subject matter was in possession of the public before the critical date of the challenged patent. *Id.* Based on well-established law that to anticipate under § 102(b) a reference must be enabled by the critical date, not by the publication date of the reference asserted as prior art, we conclude that to anticipate under § 102(e) a reference must be enabled by the date of invention of the challenged claim. As determined previously, Ryan is enabled by commercial software available to the public on June 23, 1997, which precedes the earliest date of invention for the ’482 patent. Thus, Ryan is prior art to the claim 1 and 5 of the ’482 patent. *See* 35 U.S.C. § 102(e) (precluding a patent if the invention of the patent was described in “a patent granted on an application for patent . . . filed in the United States before the invention”).

Second, we are not persuaded by Patent Owner’s arguments citing cases concerning (i) the written description requirement of 35 U.S.C. § 112, *In re Wertheim*, 646 F.2d 527 (CCPA 1981), and (ii) the problem of “secret prior art,” *Alexander Milburn Co. v. Davis-Bournonville Co.*, 270 U.S. 390 (1926). Patent law now recognizes “secret prior art” in section 102(e), and the Federal Circuit has observed that “[e]ven the ‘secret prior art’ of § 102(e) is ultimately public in the form of an issued patent before it attains prior art status.” *OddzOn Prods., Inc. v. Just Toys, Inc.*, 122 F.3d 1396, 1402 (Fed. Cir. 1997). Further, it is well-settled that the enablement requirement is a

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separate requirement from the written description requirement. *See, e.g., Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010); *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563 (Fed. Cir. 1991).

Moreover, “[t]he enablement requirement is often more indulgent than the written description requirement. The specification need not teach explicitly those in the art to make and use the invention; the requirement is satisfied if, given what they already know, the specification teaches those in the art enough that they can make and use the invention without ‘undue experimentation.’” *Amgen*, 314 F.3d at 1334.

Finally, we are not persuaded by Mr. Ludwick’s testimony addressing the inability of technology in 1994 to implement speech recognition technology that kept up with conversation. PO Resp. 20 (citing Ex. 2010 ¶¶ 25-28). For the reasons discussed previously, Ryan does not need to be enabled as of 1994 to qualify as prior art to claims 1 and 5 of the ’482 patent. Further, we note the language used to describe transcription speeds used in the written description of the ’482 patent—transcription speeds “which will translate to digital text spoken words of a user at the normal speeds of human communication in conversation” (Ex. 1001, 5:54-56)—is not included in claims, which merely recite “the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream.”

For these reasons, Ryan need not be enabled as of 1994 to qualify as prior art to claims 1 and 5 of the ’482 patent. We have determined that Ryan

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was enabled as of June 1997 and, therefore, qualifies as prior art to claims 1 and 5.

### *3. Analysis of Claims 1 and 5*

To support its contention that Ryan anticipates independent claim 1 and its dependent claim 5, Petitioner relies on analysis as to how each claim limitation is disclosed by Ryan and also relies on declaration testimony by Mr. Occhiogrosso. Pet. 13-19 (citing Ex. 1004). Patent Owner responds, relying on declaration testimony by Mr. Ludwick and others. PO Resp. 24-37 (citing Exs. 2010-2013). Having considered the parties' contentions and supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that Ryan discloses, either expressly or inherently, each limitation of claims 1 and 5, and so anticipates claims 1 and 5, for the reasons set forth below.

In particular, Ryan's description of using speech recognition software noted above discloses "the call assistant speaking in voice the same words that the call assistant hears spoken by the hearing person into a microphone connected to a digital computer" and "the digital computer using voice recognition computer software trained to the voice of the call assistant to translate the words of the voice spoken by the call assistant," as recited in independent claim 1. Ryan's TDD discloses the recited "telecommunication device displaying in visually readable text the words in the digital text message stream." Ex. 1004, 1:53-59; 2:52-54; 4:65-66.

Further, Petitioner acknowledges that Ryan does not disclose expressly "a microphone connected to a digital computer," as recited in

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independent claim 1. Pet. 14-15. Petitioner, however, asserts that Ryan inherently discloses those components. *Id.* (citing Ex. 1004 ¶ 28). We credit Mr. Occhiogrosso’s testimony that the recited “microphone connected to a digital computer” necessarily must be present in Ryan’s relay system for it to process the voice of the relay operator, and a digital computer necessarily must be present for Ryan’s relay system to use speech recognition software. Ex. 1014 ¶ 28 (citing Ex. 1004, 4:14, 33). Thus, we find that Ryan inherently discloses the recited “microphone connected to a digital computer.”

A central dispute between the parties is whether Ryan discloses “a digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream,” as recited in independent claim 1. *Compare* Pet. 15-16, 18-19 *with* PO Resp. 24-37.

Petitioner contends this limitation is disclosed by Ryan’s relay interface system in which a relay agent is responsible for relaying messages between phone 14 and TDD 16. Pet. 15 (citing Ex. 1004, 4:19-38). We agree with Petitioner that Ryan’s description of “speech recognition software . . . employed at [relay agent] device 20 [and] . . . specifically designed to recognize the voice of particular relay agents” discloses the recited “digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant.” *See* Pet. 15 (citing Ex. 1004, 4:24-34) (emphasis omitted). We also agree that Ryan’s indication

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that “[i]f the software is specifically designed to recognize the voice of particular relay agents, the accuracy of the relay service may be improved by having one of these agents listen to the caller and repeat the voice message into a terminal adapted to convert the agent’s voice message into a data message” discloses “the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream.” *See* Pet. 15 (citing Ex. 1004, 4:33-38) (emphasis omitted).

Patent Owner responds with several arguments that Ryan does not disclose the recited digital computer, none of which we find persuasive. *See* PO Resp. 25-37. Undergirding some of Patent Owner’s contentions is the state of the art of voice recognition technology in 1994. *See* PO Resp. 27 (“[S]peech recognition was not actually used at all in the [telecommunications relay service] field in 1994”); *id.* at 37-38 (asserting Ryan must be read narrowly in view of the state of the art of telecommunications relay service art in 1994); Ex. 2010 ¶¶ 23-30 (Mr. Ludwick submitting that Ryan does not contain an enabling disclosure of the recited digital computer based on technology available in 1994). The state of the art of the relevant technology in 1994, however, has limited probative value. Rather, the state of the art of the relevant technology in September 1997, the date of invention of the subject matter claimed in the ’482 patent, is of greater significance. *See* 35 U.S.C. § 102(e) (finding subject matter unpatentable if the “the invention was described in [a reference] *before the invention*”) (emphasis added). As noted previously,

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there is no dispute about the state of voice recognition technology as of June 23, 1997, when Dragon Naturally Speaking was released.

Patent Owner contends that Ryan does not disclose the recited digital computer because the claims require voice recognition software to be running or stored on the call assistant's workstation. PO Resp. 25-26. As discussed above, we disagree with Patent Owner's implicit construction of "the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream." For the reasons noted above, we do not construe the limitation to require the voice recognition computer software package to be stored on the computer programmed to use the software package. Thus, we do not agree with Patent Owner's argument because it is not commensurate in scope with the claims.

Moreover, contrary to Patent Owner's contentions, we find Ryan discloses voice recognition software running at the location of the call assistant. Ryan indicates "speech recognition software could be employed at device 20," which is included in Ryan's telecommunications relay interface system 10 used by the relay agent. Ex. 1004, 3:43-45; *see also id.* at Fig. 1 (showing agent device 20 within telecommunications relay interface system 10). Ryan goes on to state "[i]f the software is specifically designed to recognize the voice of particular relay agents, the accuracy of the relay service may be improved by having one of these agents listen to the caller and repeat the voice message into a terminal adapted to convert the agent's voice message into a data message." *Id.* at 4:33-38. We do not agree with

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Patent Owner's assertion that, because Ryan indicates "a terminal" (rather than expressly identifying a particular component shown in Figure 1), Ryan's voice recognition software could be located other than on the agent's workstation.

Also, Patent Owner contends that Ryan does not disclose the recited "voice recognition software trained to the voice of the call assistant" because Ryan's software is not trained as required by Patent Owner's interpretation of the required training. Rather, according to Patent Owner, Ryan discloses voice recognition software that is "designed," which means the software is designed in advance of implementation at the source code level and, therefore, the software is not trained. PO Resp. 26-27.

For the reasons noted previously, we do not agree the recited trained voice recognition software precludes training during software design, which Patent Owner acknowledges is disclosed by Ryan. *Id.* at 27-28. Thus, we do not agree with Patent Owner's argument because it is not commensurate in scope with the claims.

Moreover, Patent Owner relies on Mr. Ludwick's testimony asserting Ryan does not teach "voice recognition computer software trained to the voice of the call assistant." PO Resp. 26-28 (citing Ex. 2010 ¶ 22). We do not find Mr. Ludwick's testimony that Ryan's voice recognition software is "designed to recognize the voice of particular relay agents" to be persuasive because Mr. Ludwick grounded his testimony in the state of the art in 1994, when the date of invention is 1997. *See* Ex. 2010 ¶ 21 (referring to the

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telecommunications relay service field in 1994), ¶ 22 (noting the needed technology “did not then exist”).

Next, Patent Owner, relying on Mr. Ludwick’s testimony, contends that Ryan does not disclose the recited “voice recognition software trained to the voice of the call assistant,” because Ryan’s “voice recognition software is written specifically to recognize the voices of a collection or group of people, rather than a particular, individual call assistant.” PO Resp. 28-29 (citing Ex. 2010 ¶ 22).

For the reasons noted previously, we do not agree that the claims are limited to voice recognition software trained to one and only one call assistant. Thus, we do not agree with Patent Owner’s argument because it is not commensurate in scope with the claims.

Moreover, we are not persuaded by Patent Owner that a person of ordinary skill in the art would interpret Ryan as only disclosing software written specifically for a group of people (PO Resp. 28-29). Patent Owner’s argument is unpersuasive because it relies on the level of ordinary skill in the art as reflected in a prior art patent filed in 1994, when the invention date of the challenged claims is September 1997. *See* PO Resp. 29 (citing Ex. 2008, U.S. Patent No. 5,553,119 (“McAllister”) filed on July 7, 1994).

Patent Owner also contends that, at most, Ryan is ambiguous as to the disclosure of a call agent translating the words spoken in voice by the call assistant into a digital text stream, and so does not anticipate claims 1 and 5. PO Resp. 29-37. Patent Owner contends, based on the goals of Ryan to correct errors before displaying words and the context of the passage, that



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Ryan discloses a relay agent using “revoicing” as an error correction mechanism for individual, unrecognized letters of a word. *Id.* at 30-35; *see* Ex. 1004, Abstract, 4:19-38.

Ryan’s technology is intended to “overcome[] the problem associated with existing telecommunications relay services by providing a system and method for correcting mistakes before the message is displayed at the end user’s TDD” (i.e., telecommunications device for the deaf). Ex. 1004, 2:35-38 (“Summary of the Invention”). In the above-quoted passage, Ryan describes ways to do so using speech recognition software. One way is automating the relay function so as to eliminate the need for a human operator. *Id.* at 4:19-24. To do so, Ryan describes using speech recognition software to convert the voice message from a caller to text “while providing an error correction feature for words not recognized by the software.” *Id.* at 4:24-28. Ryan further describes the error correction feature as having two forms—phonetic spelling of the unrecognized word by the speech recognition software or prompting the caller to spell the unrecognized word. *Id.* at 4:29-33. Ryan describes, in the passage, another way to improve the accuracy of a relay system before the text is displayed at the TDD—if the speech recognition software is designed specifically to recognize the voice of particular relay agents, a relay agent “listen[s] to the caller and repeat[s] the voice message into a terminal adapted to convert the agent’s voice message into a data message.” *Id.* at 4:33-38.

In contrast to Ryan’s description of the error correction by the *caller* spelling letters of an unrecognized word, here Ryan unambiguously

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describes a relay agent repeating the voice message of the caller and having speech recognition software, designed specifically to recognize the voice of the relay agent, convert the agent's voice message into a data message. Thus, we are not persuaded that Ryan is ambiguous as to its disclosure of translating the words spoken by the call assistant, and we are not persuaded that Ryan discloses only letters (rather than words) being translated.

For these reasons, we find Ryan discloses the recited "computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream," recited in independent claim 1.

Claim 5, which depends from independent claim 1, additionally recites "there are separate telephone lines of the telephone system used for communicate between the call assistant and the hearing person and the call assistant and the deaf person." As noted by Petitioner (Pet. 17), Ryan's Figure 1 shows two telecommunications links, 18 and 22. Ex. 1004, Fig. 1, 3:48-52. Ryan's telecommunications link 18 connects phone 14 with relay interface 10, and Ryan's telecommunications link 22 connects telecommunications device for the deaf ("TDD") 16 with the relay interface 10. *Id.* at 3:48-52. Ryan's relay interface is used by an operator or relay agent. *Id.* at 4:19-21. We find that Ryan's telecommunications links 18 and 22 disclose the recited telephone lines recited in claim 5.

We, therefore, determine that Petitioner has demonstrated by a preponderance of the evidence that Ryan anticipates claims 1 and 5 under 35 U.S.C. § 102(e).

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*E. Obviousness over Wycherley and Yamamoto*

Petitioner asserts that claims 1 and 5 of the '482 patent are unpatentable under 35 U.S.C. § 103(a) for obviousness over Wycherley and Yamamoto. Pet. 22-25. Petitioner asserts both Wycherley and Yamamoto qualify as prior art to the '482 patent under 35 U.S.C. § 102(b). Pet. 8, 11. Patent Owner challenges Petitioner's contentions regarding Wycherley and Yamamoto. PO Resp. 38-59.

*1. Yamamoto Is a Printed Publication under 35 U.S.C. § 102(b)*

Petitioner asserts that Yamamoto was published in March 1996 and, therefore, qualifies under 35 U.S.C. § 102(b) as prior art to the '482 patent. Pet. 11. Patent Owner contends that Yamamoto is not prior art because Petitioner has not provided sufficient evidence to show that Yamamoto was a publicly accessible printed publication more than one year prior to September 8, 1997, the earliest effective filing date claimed by the '482 patent. Mot. to Exc. Yamamoto; Paper 65.

*a. Evidence of Public Accessibility*

We begin with some procedural background to provide context for the evidence relied on by Petitioner. In April 2014, approximately one month after our Institution Decision, Petitioner served on Patent Owner supplemental evidence in response to Patent Owner's objections regarding the publication date of Yamamoto and, hence, its prior art status. *See* Paper 20, 4; *see also* Paper 61, 3-4 (detailing procedural history). On May 30, 2014, Patent Owner filed its Patent Owner Response, which did not

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challenge the sufficiency of Petitioner's evidence demonstrating the public accessibility of Yamamoto, or otherwise contend that Yamamoto is not prior art to the '482 patent under 35 U.S.C. § 102(b). Paper 28; *see* Paper 61, 4. Rather, Patent Owner waited an additional three months, until August 26, 2014, in its Motion to Exclude Evidence, to challenge the sufficiency of Petitioner's evidence regarding the public accessibility of Yamamoto. Paper 44; *see* Paper 61, 4.

Petitioner then moved to submit supplemental information under 37 C.F.R. § 123(b), including a transcript of a videotaped interview with Mr. Seiichi Yamamoto, the first named author of the Yamamoto reference. Paper 50; Ex. 2018 (Videoconference Deposition of Seiichi Yamamoto, Aug. 20, 2014) ("Yamamoto transcript"). We granted the motion, and permitted the parties to file supplemental briefing regarding the public accessibility of Yamamoto, including the admissibility of the Yamamoto transcript. *See* Paper 61, 10-11; Paper 63 (Petitioner's Additional Briefing); Paper 65 (Patent Owner's Response to Additional Briefing); Paper 66 (Petitioner's Reply to Patent Owner's Response to Additional Briefing).

We now turn to the evidence regarding the public accessibility of Yamamoto. The first page of Yamamoto indicates it was a paper presented at the Proceedings of the Acoustical Society of Japan Spring 1996 Research Presentation Conference in March 1996. Ex. 1006. In support of its contention that Yamamoto was publicly accessible in March 1996, Petitioner relies primarily on the transcript of the interview with Mr. Yamamoto, in which the parties questioned Mr. Yamamoto regarding the presentation and

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distribution of the paper at the conference. *See* Ex. 2018. This interview was conducted in connection with the related district court proceeding, *Ultratec, Inc. v. Sorenson Communications, Inc.*, No. 13-CV-00346 (W.D. Wis.). *See* Ex. 2017, 1.

Pursuant to stipulation of the parties, both parties had the opportunity to ask Mr. Yamamoto questions at the interview, an interpreter was present to translate Mr. Yamamoto's testimony, and a court reporter made a stenographic record of the English portion of the interview. *See* Ex. 1062 (Stipulation Regarding Seiichi Yamamoto) ¶¶ 1, 3. The parties also stipulated that the stenographic record of the interview would be treated as sworn deposition testimony in the district court proceeding and, "[w]ith respect to other proceedings, the stenographic record will be treated as a sworn deposition taken in Western District of Wisconsin Case Nos. 13-cv-346 and 14-cv-66 at which both parties appeared and had the opportunity to question the witness." *Id.* ¶ 5.

Patent Owner contends the Yamamoto transcript should be excluded as evidence because the parties did not agree it could be used in this proceeding. Paper 65, 5-6. To the contrary, the parties' stipulation provides that "[t]he use and admissibility of the stenographic record in any other proceedings will be governed by the rules in effect with respect to such other proceeding." Ex. 1062 ¶ 5. Thus, the parties agreed that the Yamamoto transcript may be used in this *inter partes* review to the extent permitted by our rules.

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Patent Owner argues that Board rules require exclusion of the Yamamoto transcript because Mr. Yamamoto was not sworn and did not sign the transcript, and because Petitioner failed to provide advance notice to the Board of its intent to take a foreign language deposition. Paper 65, 6 (citing 37 C.F.R. § 42.53(a), (e), (f)). The Yamamoto transcript, however, does not run afoul of the rules cited by Patent Owner because Petitioner seeks to admit the transcript as a deposition taken in the district court proceeding, not as deposition testimony taken in this *inter partes* review proceeding. *See* Paper 66, 1. Moreover, the parties stipulated that the Yamamoto transcript would be treated as sworn deposition testimony taken in the district court. Ex. 1062 ¶ 5.

Patent Owner further contends that the Yamamoto transcript constitutes inadmissible hearsay under the Federal Rules of Evidence, which apply to this proceeding. Paper 65, 7 (citing 37 C.F.R. § 42.62(a); Fed. R. Evid. 801, 802). Petitioner responds that the Yamamoto transcript is admissible as an exception to the rule against hearsay. Paper 66, 1-3. We agree with Petitioner.

First, Rule 804(b)(1) allows the use of former testimony of an unavailable witness if the testimony “(A) was given as a witness at a trial, hearing, or lawful deposition, whether given during the current proceeding or a different one; and (B) is now offered against a party who had . . . an opportunity and similar motive to develop it by direct, cross-, or redirect examination.” Fed. R. Evid. 804(b)(1). By stipulation of the parties, the interview of Mr. Yamamoto was treated as a lawful deposition in the district

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court proceeding. Ex. 1062 ¶ 5. Also, both parties had the opportunity to develop Mr. Yamamoto's testimony and had the same motive as in this proceeding—to determine whether Yamamoto was publicly accessible. *See* Ex. 1062 ¶ 1; Ex. 2018. As we determined previously, Petitioner reasonably concluded, based on Patent Owner's Response (Paper 28) filed on May 30, 2014, that Patent Owner no longer was challenging the prior art status of the Yamamoto reference, and only became aware of Patent Owner's continued challenge when Patent Owner improperly challenged the sufficiency of the Yamamoto reference in its Motion to Exclude filed on August 26, 2014, well after the time for taking testimony in this proceeding. Paper 63, 7. At that point, Petitioner had no reasonable means for obtaining Mr. Yamamoto's testimony for this proceeding. *See* Paper 50, 3 (Petitioner's Motion for Leave to File Supplemental Evidence Regarding Yamamoto). We determine, therefore, that Mr. Yamamoto was unavailable as a witness, *see* Fed. R. Evid. 804(a), and the Yamamoto transcript is admissible under Rule 804(b)(1).<sup>12</sup>

In addition, the Yamamoto transcript is admissible under Rule 807. First, Mr. Yamamoto's videotaped interview, which was stipulated to be sworn deposition testimony in the district court proceeding, and in which Mr. Yamamoto was subject to cross-examination, "has equivalent

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<sup>12</sup> We note that the parties stipulated, for purposes of the district court proceeding, that Mr. Yamamoto's testimony would be deemed former testimony under Rule 804(b) and Mr. Yamamoto was deemed unavailable under Rule 804(a).

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circumstantial guarantees of trustworthiness.” Fed. R. Evid. 807(a)(1). Also, Petitioner offers the Yamamoto transcript as evidence of a material fact—the public availability of a prior art reference—and it is more probative on that point than any other evidence Petitioner can obtain through reasonable efforts because Mr. Yamamoto co-authored the Yamamoto reference and presented it at a conference of the Acoustical Society of Japan. *See* Fed. R. Evid. 807(a)(2), (3). Finally, admitting the Yamamoto transcript is in the interests of justice, as it provides as complete a record as possible regarding the public accessibility of the Yamamoto reference. *See* Fed. R. Evid. 807(a)(4); *see also* Paper 63, 8 (determining that submission of the Yamamoto transcript is in the interests of justice).

Finally, we are not persuaded by Patent Owner’s argument that the Yamamoto transcript should be excluded under Federal Rules of Evidence 602, 603, and 604. Mr. Yamamoto’s testimony indicates that he was present at the conference at which his paper was presented and had personal knowledge of the distribution of the paper, as required by Rule 602. *See* Ex. 2018. As for Rules 603 and 604, requiring an oath or affirmation by a witness and interpreter, respectively, they do not require exclusion of the Yamamoto transcript because the parties stipulated that it would be treated as sworn deposition testimony. *See* Ex. 1062 ¶ 5.

*b. Yamamoto Was Publicly Accessible in March 1996*

Under 35 U.S.C. § 102(b), a person is not entitled to a patent if “the invention was . . . described in a printed publication . . . more than one year prior to the date of the application for patent.” “The statutory phrase



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‘printed publication’ has been interpreted to mean that before the critical date the reference must have been sufficiently accessible to the public interested in the art; dissemination and public accessibility are the keys to the legal determination whether a prior art reference was ‘published.’” *In re Cronyn*, 890 F.2d 1158, 1160 (Fed. Cir. 1989) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1568 (Fed. Cir. 1988)). The determination of whether a reference qualifies as a printed publication “involves a case-by-case inquiry into the facts and circumstances surrounding the reference’s disclosure to members of the public.” *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004).

In the present case, based on the circumstances surrounding the presentation and dissemination of the Yamamoto reference, we conclude that Yamamoto was publicly accessible in March 1996, more than one year before September 8, 1997, the earliest effective filing date of the claims of the ’482 patent. As indicated on the first page of the reference, the Yamamoto reference was presented at the March 1996 Research Presentation Conference of the Acoustical Society of Japan. Ex. 1006, 1. Mr. Yamamoto’s testimony, which we find credible, confirms that he gave an oral presentation of the paper at Special Session A of the conference on March 26, 1996. Ex. 2018, 6:8-23, 13:23-14:3. According to Mr. Yamamoto’s estimate, 100 to 150 people attended his presentation of the paper. *Id.* at 13:23–14:3.

The Acoustical Society created a book containing all the papers presented at the conference, including the Yamamoto paper. *Id.* at 8:12-23,

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12:24-13:10, 15:18-19. Conference attendees were able to purchase a copy of the book at the time of registration. *Id.* at 13:8-10, 14:17-21. Beginning on the first day of the conference, copies of the book were “piled up on the registration desk for purchase, for anyone who wished to purchase.” *Id.* at 16:19-22. According to Mr. Yamamoto, many of his friends who attended the conference purchased a copy of the book. *Id.* at 9:18-10:2, 15:11-17. He also made the paper available to anyone who asked for a copy, and he recalls providing copies to subordinates of Mr. Fujioka, his co-author, though he does not recall the precise timing. *Id.* at 14:8-13, 16:6-14.

The facts of this case are similar to those in *MIT v. AB Fortia*, 774 F.2d 1104 (Fed. Cir. 1985). In that case, our reviewing court concluded that a paper that had been presented orally at a conference attended by 50 to 500 interested persons of ordinary skill in the art, and had been disseminated to at least six persons, was a printed publication for prior art purposes. *Id.* at 1109. Similarly, Mr. Yamamoto orally presented his paper to 100 to 150 persons of ordinary skill in the art, and many conference attendees received a copy of the book containing the paper. Ex. 2018, 9:18-10:2, 13:23-14:3, 15:11-17.

Patent Owner argues that without a detailed analysis of factors such as the length of time the paper was displayed at a conference, the expertise of its target audience, and the expectations regarding and ease with which the material would be copied, Yamamoto cannot be considered prior art. Paper 61, 7-8 (citing *In re Klopfenstein*, 380 F.3d at 1350). Those factors, however, are relevant when determining the public accessibility of a

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reference that was displayed at a conference without distribution to the public. *In re Klopfenstein*, 380 F.3d at 1350. In contrast, the Yamamoto reference was included in a book of papers presented at the Acoustical Society conference that was available for purchase by all conference attendees, and actually was purchased by many attendees. Ex. 2018, 9:18-10:2, 12:24-13:10, 15:11-19.

Patent Owner also contends that the distribution of the Yamamoto reference does not show it was accessible publicly because there is no evidence that it occurred among people in the interested public. Paper 65, 8-9. Although Mr. Yamamoto could not recall if the Acoustical Society of Japan's March 1996 conference was open to non-Society members, Ex. 2018, 7:23-8:11, attendance by at least 100 to 150 Society members is sufficient to show the Yamamoto reference was available to persons interested in the subject matter of the paper, voice recognition applications in communication systems. This case is distinguishable from those cited by Patent Owner, which involve papers posted online for a small, closed group of specialists. *See* Paper 61, 8-9 (citing *SRI Int'l Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1197 (Fed. Cir. 2008); *Samsung Electronics Co. v. Rembrandt Wireless Techs., LP*, 2014 WL 4537478, at \*5, IPR2014-00515 (PTAB Sept. 9, 2014)).

For these reasons, based on the facts and circumstances regarding presentation and dissemination of the Yamamoto reference, we determine that Yamamoto was publicly accessible in March 1996. Yamamoto,

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therefore, qualifies as a printed publication that is available as prior art to the claims of the '482 patent.<sup>13</sup>

## 2. *Summary of Wycherley*

Wycherley describes a system for a relay service for establishing a telephone call between a hearing person and a hearing-impaired person. Ex. 1002, 1:6-10. To reduce the time a service attendant is involved in such a telephone call, Wycherley's relay system uses text-to-speech processing and, on a limited basis, automatic speech recognition. *Id.* at Abstract. Wycherley's relay system includes Automatic Speech Recognition (ASR) units, which may be software that is available commercially and trained using a voice template, enabling the voice processor to recognize each word uttered by the speaker in a call. *Id.* at 3:59-60; 4:26-29, 35-56. In the event of excessive translation errors by the automated translation of the hearing person's words, Wycherley's relay system transfers the telephone call to a call attendant, who "may request that the speaker repeat the substance of his or her response" and type the words spoken by the hearing person for transmission to the hearing impaired person's TDD terminal. *Id.* at 5:42-47; *see id.* at 5:1-53.

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<sup>13</sup> Because we conclude that Yamamoto was publicly accessible in March 1996, we need not address Petitioner's argument and evidence regarding public accessibility in May 1996, when Petitioner asserts that the book containing Mr. Yamamoto's paper was received by the Japan Science and Technology Agency. *See* Paper 65, 6.

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### *3. Summary of Yamamoto*

Yamamoto describes tests of voice recognition systems. Ex. 1006, 34-36. Along with other examples, Yamamoto describes a test with an operator assistance system for international calling, noting a preliminary step in an operator assistance system for international calling is “voice recognition of an operator repeating the question from the [international calling] user” to increase efficiency. *Id.* at 35, § 3.2.

### *4. Analysis of Claims 1 and 5*

To support its contentions that claims 1 and 5 would have been obvious over Wycherley and Yamamoto, Petitioner relies on analysis provided with respect to the references and the declaration testimony of Mr. Occhiogrosso. Patent Owner responds, relying on declaration testimony by Mr. Ludwick and others. PO Resp. 38-45 (citing Exs. 2002, 2004, 2005, and 2010). Having considered the parties’ contentions and supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 5 are unpatentable for obviousness over Wycherley and Yamamoto for the reasons set forth below.

Petitioner relies on Wycherley as teaching or suggesting the microphone recited in independent claim 1. *See* Pet. 24. Petitioner relies on a combination of Wycherley and Yamamoto for teaching or suggesting “a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream,” as recited in independent claim 1. As

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acknowledged by Petitioner, Wycherley's relay service uses "caller-specific templates to implement speaker-dependent voice recognition directly on the voice of the unimpaired caller." Pet. 22 (citing Ex. 1002, 3:43-4:56).

Petitioner further relies on Wycherley for disclosing a digital computer connected to the microphone and programmed to use a voice recognition computer software package trained to the voice of *the caller* (rather than trained to the voice of the call assistant, as recited in independent claim 1) to translate the words spoken in voice by *the caller* (rather than the call assistant) into a digital text stream. In combination with Wycherley's teaching of a computer programmed for the caller, Petitioner relies on Yamamoto's description of an international call assistance system as teaching the recited call assistant. *See* Pet. 22-24. Specifically, Petitioner relies on Yamamoto's description of an international call assistance system that uses "voice recognition of an operator restating the question from the [international calling] user" as teaching or suggesting "the computer programmed to use a voice recognition computer software package" to translate the voice of the call assistant. *Id.* Thus, Petitioner contends the combination of Wycherley and Yamamoto teaches or suggests "a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream," as recited in independent claim 1.

Petitioner, relying on Mr. Occhiogrosso for support, indicates both Wycherley and Yamamoto "involve the use of voice recognition to increase

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the efficiency of operator assisted telephone services” and contends “it would have been obvious to incorporate *Yamamoto*’s intermediate re-voicing solution into *Wycherley* during situations where, like *Yamamoto*, full automation was not practical.” Pet. 23 (citing Ex. 1014 ¶ 42).

We are persuaded that *Wycherley* teaches or suggests “a microphone connected to a digital computer,” as recited in independent claim 1. *See* Pet. 24; *id.* at 22-25. *Wycherley* describes an attendant console at which an attendant listens, and *Wycherley* depicts headsets connected to attendant terminals 220 (Ex. 1002, 1:31-37; Fig. 1), which teaches or suggests that the attendant hears words. *Wycherley* describes that the attendant transmits an oral version of a displayed text message transmitted by a hearing-impaired person (*id.* at 1:27-37), which teaches or suggests the attendant speaks in voice the displayed text. *Wycherley*’s Automatic Speech Recognition (ASR) unit includes modem 305 for transmission of digitized words to the TDD user (*id.* at 5:13-14; Fig. 1 (depicting modem 305 in an ASR unit)), which teaches or suggests translating words into a digital text message stream. *Wycherley* further describes, after transmitting to the hearing person an oral version of a displayed text message transmitted by a hearing-impaired person, the attendant at the console “listens to” the hearing person’s oral response. *Id.* at 1:31-37. Thus, we are persuaded that *Wycherley* teaches or suggests receiving voice communications from the telephone system and transmitting those voice communications to the ear of the call assistant.

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We also are persuaded that Petitioner's proposed combination of Wycherley's relay service that uses text-to-speech processing and automatic speech recognition with Yamamoto's voice recognition system used to provide operator assistance would have taught or suggested to a person of ordinary skill in the art "a microphone connected to a digital computer" and "the digital computer using voice recognition computer software trained to the voice of the call assistant to translate the words of the voice spoken by the call assistant into a digital text message stream containing the words spoken by the call assistant," as recited in independent claim 1. Thus, we conclude that the teachings of Wycherley and Yamamoto in combination would have suggested the subject matter of claim 1 as a whole to one of ordinary skill in the art.

Claim 5, which depends from independent claim 1, further recites "there are separate telephone lines of the telephone system used for communicat[ing] between the call assistant and the hearing person and the call assistant and the deaf person." For this limitation, Petitioner relies on Wycherley's teaching of a TDD user transmitting a text message "via a telephone connection" to an attendant's console and the attendant at the console transmitting "via a separate telephone connection to the unimpaired person an oral version of the displayed text message." Ex. 1002, 1:27-33; *see* Pet. 22.

We also determine that Petitioner has articulated sufficient reasoning with some rational underpinning to support the legal conclusion that the subject matter of the claims would have been obvious to one of ordinary



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skill in the art in view of the teachings of Wycherley and Yamamoto as combined in the manner proposed by Petitioner. *See KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). As noted by Petitioner (Pet. 232), both references disclose using voice recognition systems to increase the efficiency of operator-assisted telephone services. *See* Ex. 1002, 3:43-57; Ex. 1006, 35; *see also* Ex. 1014 ¶ 42. We agree that, at the time of the invention in 1997 and in view of the commercial availability of Dragon Naturally Speaking, it would have been obvious to one skilled in the art to mix and match the teachings of voice recognition systems used in operator-assisted telephone services as a whole to arrive at the claimed invention, because the prior art shows a person of ordinary skill could predictably use known elements according to their established functions and address a common problem—increasing the efficiency of operator-assisted telephone services. *See KSR*, 550 U.S. at 416 (stating “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results”), 420 (indicating “[u]nder the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed”).

We first turn to Patent Owner’s contention that Wycherley and Yamamoto do not teach the subject matter of the claims—particularly, the recited “a digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to

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translate the words spoken in voice by the call assistant into a digital text stream.” PO Resp. 38-44.

Patent Owner contends that Yamamoto, rather than facilitating communication between a hearing person and a hearing-impaired person, only provides examples of single word speech recognition and speech recognition software used for database information retrieval tasks. Patent Owner asserts that Yamamoto does not disclose the subject matter of claims 1 and 5 because the claims require “a real-time continuous speech recognition application” and require that the call assistant “repeat[s] everything” the caller says. PO Resp. 40, 42. Patent Owner further indicates Yamamoto is unsuitable to perform the subject matter of the claimed subject matter because Yamamoto describes (i) speech recognition only for database retrieval tasks, (ii) word spotting voice recognition, (iii) using isolated word recognition because it recognizes continuous speech recognition is not yet commercially viable, and (iv) a continuous voice recognition system as being only able to identify a restricted set of responses.

The pertinent question, however, is whether the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art in view of the combined references, not whether the references in the asserted combination individually teach the subject matter of claims 1 and 2. 35 U.S.C. § 103(a); *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“the test [for obviousness] is what the combined teachings of the references would have suggested to those of ordinary skill in the art”). Patent Owner’s

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arguments in large measure amount to attacks on Wycherley and Yamamoto individually, without sufficient consideration of the combination of Wycherley and Yamamoto, an approach we find unpersuasive. Patent Owner's arguments regarding Yamamoto unduly focus on specific, isolated capabilities described in Yamamoto without addressing what those capabilities, in combination with Wycherley's relay with voice recognition software trained to the caller's voice, would have suggested to one of ordinary skill in the art at the time of the invention of the '482 patent.

Notably, Yamamoto describes "a continuous speech recognition system driven by a context-free grammar" and describes an operator assistance system that uses voice recognition of an operator repeating words heard from a caller. Ex. 1006, 34-35. Further, Dragon Naturally Speaking was available commercially in June 1997 before the invention in September 1997. Thus, we credit the testimony of Petitioner's declarant, Mr. Occhiogrosso, that that these features would have been known in September 1997 to one of ordinary skill in the art in view of the teachings of Wycherley and Yamamoto. Pet. 23; Ex. 1014 ¶ 38-43.

In challenging the combination of Wycherley and Yamamoto, Patent Owner further contends, with support of Mr. Ludwick, that a person of ordinary skill would not have considered Wycherley because (i) continuous speech recognition technology did not exist in 1990, when the application that issued as Wycherley was filed, (ii) some implemented aspects of Wycherley's relay were "disliked by customers," and (iii) Wycherley teaches away from designing a relay employing revoicing. PO Resp. 49-51.

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Mr. Ludwick's testimony regarding the state of the art in 1990 has little probative value because the time of the invention is September 1997, as discussed previously. *See* 35 U.S.C. § 103(a) ("A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious *at the time the invention was made* to a person having ordinary skill in the art to which said subject matter pertains.") (emphasis added). Further, as discussed previously, continuous speech recognition software was known by the invention date of claims 1 and 5 in 1997.

Nor do we agree with Patent Owner that Wycherley teaches away from the claimed invention. Patent Owner has not identified where Wycherley criticizes, discredits, or otherwise discourages "us[ing] a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream," as recited in independent claim 1. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) (prior art does not teach away from claimed subject matter merely by disclosing a different solution to a similar problem unless the prior art also criticizes, discredits, or otherwise discourages the solution claimed).

Moreover, Mr. Ludwick's statements concerning customer dislike of some features of an implementation of Wycherley's relay do not persuade us that a person of ordinary skill in the art would not look to Wycherley. First, Patent Owner has not identified the aspect of the implementation of Wycherley's relay that was less desirable than the claimed invention.

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Second, even if some aspect of the implementation of Wycherley's relay was less desirable than the claimed invention, that, in itself, is insufficient to teach away from the purportedly inferior alternative of Wycherley unless the disclosure criticizes, discredits, or otherwise discourages that alternative. *Cf. In re Fulton*, 391 F.3d at 1200 ("a finding that the prior art as a whole suggests the desirability of a particular combination need not be supported by a finding that the prior art suggests that the combination claimed by the patent applicant is the preferred, or most desirable, combination").

Thus, we are not persuaded that Wycherley teaches away from the subject matter recited in claims 1 and 5.

Further, Patent Owner contends that Yamamoto teaches away, because Yamamoto states that "continuous speech and spontaneous speech recognition [was still] not yet commercially viable." PO Resp. 53 (citing Ex. 1006, 33; Ex. 2010 ¶ 52). We are not persuaded. First, as noted previously, we do not agree that Yamamoto indicates that "recognition of continuous speech and spontaneous speech recognition is not yet commercially viable" in all contexts. Rather, we have determined that Yamamoto teaches particular techniques—word spotting—are useful in contexts in which "recognition of continuous speech and spontaneous speech recognition is not yet commercially viable." Ex. 1003, 33. Although this indicates that such technology is not viable in some situations, this does not indicate the technology is not viable commercially in all contexts. Moreover, Yamamoto indicates "[v]oice-recognition systems [and] voice-recognition software . . . have arrived at a usable state" (Ex. 1006, 33),

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which further undercuts Patent Owner's position that voice recognition technology is not viable commercially. Yamamoto also indicates "a variety of voice recognition application systems in communication networks are also becoming commercially available" (*id.*), which further undercuts Patent Owner's position that voice recognition technology is not viable commercially. Thus, we do not agree Yamamoto criticizes, discredits, or otherwise discourages—and so teaches away—from the claimed subject matter.

According to Patent Owner, Yamamoto does not teach how to incorporate automatic speech recognition into real time telephone communication between users. PO Resp. 53. Yamamoto, however, need not teach how to incorporate automated speech recognition into real-time telephone communication between users. A determination of obviousness is based not on teaching bodily incorporation of parts from one disclosed system into another, but, as noted previously, on what the combined teachings would have suggested to one with ordinary skill in the art. *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012); *Keller*, 642 F.2d at 425.

Nor are we persuaded that automated speech recognition, enabled by Dragon Naturally Speaking in 1997, would have been uniquely challenging or otherwise beyond the level of ordinarily skilled artisans to combine with Wycherley's relay system at the time the invention was made in August or September 1997. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007). Indeed, the '482 patent describes the use of a voice recognition software, such as Dragon Naturally Speaking, but does not

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describe the technical details of how to incorporate Dragon Naturally Speaking into the computer terminal containing a copy of the software. *See* Ex. 1021, 5:42-57.

Patent Owner further submits Yamamoto is focused “on operated-assisted database tasks,” Yamamoto is unsuitable for a relay application for a conversation between multiple parties, and that modifying Wycherley so that the relay agent repeats the unimpaired user’s words would render Wycherley unsatisfactory for its intended purpose. PO Resp. 51-52. Patent Owner, relying on its declarant, reasons that the use of a relay agent to repeat the caller’s words “would negate Wycherley’s entire premise of providing a more cost efficient relay service by reducing or eliminating the call assistant’s involvement.” PO Resp. 52 (citing Ex. 2010 ¶ 55). We disagree because we credit Mr. Occhiogrosso’s testimony (Ex. 1053 ¶ 60) that augmenting Wycherley’s call assistants with voice recognition software would increase their efficiency, and thus help achieve Wycherley’s goal of minimizing use of call assistants.

In view of the foregoing, we are persuaded that Petitioner has articulated a sufficient reason to support a conclusion of obviousness in view of Petitioner’s combination of Wycherley and Yamamoto. *See* PO Resp. 44-49.

#### *5. Secondary Considerations*

Factual inquiries for an obviousness determination include secondary considerations based on evaluation and crediting of objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

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Notwithstanding what the teachings of the prior art would have suggested to one with ordinary skill in the art at the time of the '482 patent's invention, the totality of the evidence submitted, including objective evidence of nonobviousness, may lead to a conclusion that the challenged claims would not have been obvious to one with ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). Secondary considerations may include any of the following: long-felt but unsolved need, failure of others, unexpected results, commercial success, copying, licensing, and praise. *See Graham*, 383 U.S. at 17; *Leapfrog Enters.*, 485 F.3d at 1162.

To be relevant, evidence of nonobviousness must be commensurate in scope with the claimed invention. *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) (citing *In re Tiffin*, 448 F.2d 791, 792 (CCPA 1971)); *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998). Thus, to be accorded substantial weight, there must be a nexus between the merits of the claimed invention and the evidence of secondary considerations. *In re GPAC*, 57 F.3d at 1580. “Nexus” is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in determining nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). The burden of showing that there is a nexus lies with the Patent Owner. *Id.*; *see Paulsen*, 30 F.3d at 1482.

Patent Owner alleges “substantial praise for the inventions claimed in [Patent Owner's] patents, including the '482 Patent, the long-felt but unresolved need of the deaf and hard of hearing community, the commercial



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success of the products and services embodying the invention, and the failure of others to provide a relay service or other solution that provided the benefits of the claimed inventions.” PO Resp. 57-59. For support, Patent Owner proffers Declarations by Ms. Brenda Battat (Ex. 2004) and Ms. Constance Phelps (Ex. 2005) describing general innovations of Patent Owner’s CapTel Service and its CapTel phone and describing their benefits to the deaf and hard of hearing community. PO Resp. 58-59; *see* Ex. 2004 ¶¶ 18-19, 25-41.

In an attempt to establish the requisite nexus, Patent Owner relies on a declaration of Mr. Ludwick (Ex. 2002) asserting that his expert declaration “explain[s], on a feature by feature basis, the nexus between those secondary considerations and the claimed design” and “illustrates, in chart form, that the CapTel system and various models of CapTel phones embody the claims of the present invention.” PO Resp. 58–59.

Patent Owner’s Response contains no substantive arguments. *Id.* Instead, Patent Owner merely lists various common forms of secondary considerations evidence, without exposition. This does not provide sufficient analysis for us to determine whether Patent Owner has provided adequate evidence of secondary considerations and a nexus between any such evidence and the merits of the claimed invention. Thus, Patent Owner’s broad contentions regarding secondary considerations in its Patent Owner Response do not demonstrate nonobviousness.

Moreover, Patent Owner’s declarations fail to establish a nexus between the merits of the claimed invention and the evidence of secondary

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considerations. To show a nexus, Patent Owner relies on Mr. Ludwick's declaration, which describes his visit to CapTel, Inc.'s relay center in Madison, Wisconsin. Ex. 2002 ¶ 47. Mr. Ludwick's chart presents his conclusions based on personal observation that the CapTel Service meets each claim limitation of the '482 patent. Ex. 2002 ¶ 48 (pages 28-30). For example, regarding "a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream," recited in independent claim 1, Mr. Ludwick asserts:

I personally observed that the CapTel Service meets this claim element. I further confirmed this from my own knowledge of CapTel Service. This feature of the CapTel Service relay is present when the Service is used with each of the CapTel Phones and has always been included as part of the CapTel Service.

Ex. 2002 ¶ 48 (page 28).

Because Mr. Ludwick's conclusions are based on personal observations, without sufficient supporting facts or data, his testimony has little probative value. *See Am. Acad. of Sci. Tech Ctr.*, 367 F.3d at 1368 ("[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations."); *see also* Fed. R. Evid. 702 (providing one may testify in the form of an opinion if the testimony is based on sufficient facts or data). As such, Mr. Ludwick's conclusory assertions do not provide a sufficient connection between objective evidence and the claimed invention, and so do

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not establish the requisite nexus between the merits of the claimed invention and the evidence of secondary considerations.

Accordingly, Patent Owner fails to provide sufficient credible evidence to support its allegations of nonobviousness based on secondary considerations. When we balance Petitioner's evidence of obviousness against Patent Owner's asserted objective evidence of nonobviousness, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 5 would have been obvious over Wycherley and Yamamoto.

*F. Obviousness over Wycherley and Yamamoto  
in Combination with Various Other References*

Petitioner asserts claims 2-4 and 6-15 would have been obvious over Wycherley, Yamamoto, and various other references, as described in more detail below. Independent claims 7, 10, and 13 are directed to a relay and recite similar limitations to those recited in claim 1. For instance, each of independent claims 7, 10, and 13 recites "a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream."

For these additional grounds of obviousness relying on Wycherley and Yamamoto, Petitioner substantially relies on the same analysis and supporting evidence described previously with regard to the ground that independent claim 1 would have been obvious over Wycherley and Yamamoto. Patent Owner argues claims 1-15 together regarding the

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combination of Wycherley and Yamamoto alone and in combination with additional references. PO Resp. 38-45. For the reasons we explained previously, we determine that Petitioner has demonstrated by a preponderance of the evidence that the challenged claims would have been obvious over Wycherley and Yamamoto.

*1. Obviousness over Wycherley, Yamamoto, and Jones*

Petitioner asserts that claims 2, 7, and 8 would have been obvious over Wycherley, Yamamoto, and Jones. Pet. 35-38. Claim 2 depends from claim 1 and further recites “the step of using the voice spoken by the call assistant to create a noise canceling signal also transmitted to the earphone of the call assistant so that the call assistant hears less of his or her own spoken voice.” Independent claim 7 recites “noise attenuating means responsive to the voice spoken by the call assistant and connected to the speaker to attenuate the noise of the voice of the call assistant from the sounds heard in the ear of the call assistant.”

Regarding claims 2 and 7, Petitioner relies on Jones’s noise cancellation system with a headset for teaching or suggesting the recited step in claim 2 and the noise attenuating means in independent claim 7. Pet. 35-37. Jones describes a noise cancellation system that eliminates unwanted sound by destructive interference. *See* Ex. 1008, Abstract; 1:16. The noise cancellation system, which includes a headset and a microphone, detects unwanted sound and provides corresponding signals to cancel the unwanted sound. *See id.* at 1:30-39. Jones explains that “[i]deally, the . . . microphone . . . perceives the same sounds as the eardrum of the listener.” *See id.* at

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1:41-42; *see also id.* at 2:31-43 (describing “feedforward techniques” to cancel noise using an external microphone placed between the listener and a noise source). Petitioner, relying on statements by Mr. Occhiogrosso, explains that Jones’s microphone “could pick up, for example, the call assistant’s own voice in order to generate a noise canceling signal that would cause the call assistant to hear less of [the assistant’s] own voice.” Pet. 36 (citing Ex. 1014 ¶ 49). Further, regarding the “noise attenuating means” recited in claim 7, as discussed previously, we construe “noise attenuating means” to require earphones, or a computer provided with noise canceling sound generation software, to attenuate the noise of the voice of the call assistant from the sounds heard in the ear of the call assistant. Jones discloses a noise cancellation system with a headset and microphone.

Based on the above, we determine that Petitioner has shown by a preponderance of the evidence that Jones teaches or suggests the noise cancellation step in claim 2 and noise cancellation means in claim 7.

Claim 8, which depends from independent claim 7, additionally recites “there are separate telephone lines of the telephone system connected between the call assistant and the hearing person and the call assistant and the deaf person.” Regarding claim 8, Petitioner relies on Wycherley’s description of two telephone lines discussed previously with respect to claim 5, which recites “there are separate telephone lines of the telephone system used for communicate between the call assistant and the hearing person and the call assistant and the deaf person.” Pet. 37 (citing Pet. 35 (citing Ex. 1001, 1:21-39)). For the reasons discussed previously, we

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determine that Wycherley teaches or suggests the two telephone lines recited in claim 8.

Regarding reasons to combine the references, Petitioner further explains, relying on Mr. Occhiogrosso, that “it would have been obvious to incorporate the noise canceling technology of *Jones* into the headset of the call assistant in *Wycherley* in order to reduce” the sound of the assistant’s own voice in the assistant’s headset (which is called “side tone”). *Id.* at 36 (citing Ex. 1014 ¶ 50). According to Mr. Occhiogrosso, this was a well-known technique at the time of the ’482 patent. *Id.* (citing Ex. 1014 ¶ 50).

We are persuaded by Mr. Occhiogrosso’s testimony that noise cancellation was a well-known technique. Thus, we conclude it would have been obvious to one skilled in the art to employ the teachings of Jones’s noise cancellation techniques with Wycherley’s and Yamamoto’s voice recognition systems used in operator-assisted telephone services, because the prior art shows a person of ordinary skill could use known elements according to their established functions to yield predictable results. *See KSR*, 550 U.S. at 416 (stating “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results”).

Relying on Mr. Ludwick, Patent Owner contends that no rationale exists to combine Wycherley and Yamamoto with Jones. PO Resp. 54 (citing Ex. 2010 ¶ 60). According to Patent Owner, side tone would not be a problem in Wycherley’s system, because “the assistant in Wycherley is only typing the conversation,” or in Yamamoto’s operator assistance, because

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there is “no indication that the operator speaks to the user or otherwise suggests that the voice of the operator is being fed back into the operator’s headset.” *Id.* We are not persuaded by Patent Owner’s contentions, which do not address adequately the prior art use of known components according to their established functions to yield predictable results.

Moreover, at least with respect to Yamamoto’s voice recognition system, Patent Owner appears to require motivation for the combination to be articulated within the Yamamoto reference itself, which is not required. *See KSR*, 550 U.S. at 419 (“The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents.”).

We, therefore, determine that Petitioner has demonstrated by a preponderance of the evidence that claims 2, 7, and 8 would have obvious over Wycherley, Yamamoto, and Jones.

## *2. Obviousness over Wycherley, Yamamoto, and Choi*

Petitioner asserts that claims 3, 10, and 11 would have been obvious over Wycherley, Yamamoto, and Choi. Pet. 42-44. Claim 3, which depends from claim 1, recites “a switch to switch the relay between one mode in which the voice of the call assistant is transmitted to the computer and another mode in which the voice of the call assistant is not transmitted to the computer but is instead transmitted over the telephone system to the hearing person.” Independent claim 10, from which claim 11 depends, recites similar limitations to those recited in independent claims 1 and 7.

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Independent claim 10 also recites, similarly to claim 3, “a switch to alternatively connect the voice of the call assistant to the computer or to the telephone system for transmission to the hearing person.” As the Specification of the ’482 patent explains, the switch “allows for the voice of the call assistant only to be directed to the hearing person at the appropriate times.” Ex. 1001, 7:7-9.

Choi describes a switch controlled by an operator who performs repetitive tasks over a telephone “to reroute outbound acoustic information from the telephone microphone temporarily to a speech-recognition subsystem, while the inbound acoustic information is still routed to the telephone ear piece” of the operator. Ex. 1009, 503. Choi also indicates that “the caller does not know when the person answering the phone is talking to the speech recognition subsystem.” *Id.* Petitioner relies on Choi for teaching or suggesting the switches recited in claims 3 and 10, respectively. Pet. 43-44.

Choi describes an operator-controlled switch that temporarily reroutes the operator’s voice to a speech recognition subsystem while the operator continues to hear the caller through the operator’s telephone earpiece. We find that Choi teaches or suggests the switch recited in claims 3 and 10.

Claim 11, which depends from independent claim 10, additionally recites “there are separate telephone lines of the telephone system connected between the call assistant and the hearing person and the call assistant and the deaf person.” For the reasons discussed previously, we determine that



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Wycherley teaches or suggests the recited telephone lines. *See* Pet. 44 (relying on Wycherley for the additional limitation recited in claim 11).

Regarding reasons to combine the references, according to Mr. Occhiogrosso, it would have been obvious to combine the switch of Choi with Wycherley's relay service using speech recognition software to "make the operation of the relay feel more conversational to the normally-hearing caller who may not be familiar with relay services." Ex. 1014 ¶ 53; *see also* Pet. 43 (citing Ex. 1014 ¶¶ 52-53).

Patent Owner indicates that Choi is "very similar to Yamamoto" and relies on similar reasons why there would be no motivation or reason to combine Choi with the teachings of Wycherley and Yamamoto. PO Resp. 54-55. For the reasons discussed above, we are not persuaded.

Rather, we conclude it would have been obvious to one skilled in the art to use the switch taught by Choi with Wycherley's and Yamamoto's voice recognition systems used in operator-assisted telephone services, because the prior art shows using known components according to their established functions. *See KSR*, 550 U.S. at 416.

We, therefore, determine that Petitioner has demonstrated by a preponderance of the evidence that claims 3, 10, and 11 would have obvious over Wycherley, Yamamoto, and Choi.

*3. Asserted Ground of Obviousness over  
Wycherley, Yamamoto, and Vasile*

Petitioner asserts that claims 4, 13, and 14 would have been obvious over Wycherley, Yamamoto, and Vasile. Pet. 48-50 (referring to Pet. 46).

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Claim 4, which depends from claim 1, recites “buffering the voice of the hearing person between the telephone system and the earphone of the call assistant selectively under the control of the call assistant.” Independent claim 13, from which claim 14 depends, recites similar limitations to those recited in independent claims 1 and 7 and additionally recites a voice buffer controlled by the call assistant.

Vasile describes a telecommunications relay system employing automated text-to-speech for conversion of a text message entered by a hearing impaired person. Ex. 1003, Abstract. Vasile describes a relay system in which a live attendant is assigned, from a pool of attendants, to a call after completion of the text-to-speech conversion. *Id.* at 1:43-50. Because of a delay in assigning a live attendant, speech of the hearing person is stored in a voice buffer. *Id.* at 1:55-68; 5:47-65. A live attendant can use control signals to retrieve spoken messages from the voice buffer and to speed up or slow down the rate of the play from the voice buffer. *Id.* at 6:4-14. We agree with Petitioner that Vasile teaches or suggests the buffering limitations recited in claims 4 and 13. Pet. 46-47, 49-50.

Claim 14, which depends from independent claim 11, additionally recites “there are separate telephone lines of the telephone system connected between the call assistant and the hearing person and the call assistant and the deaf person.” For the reasons discussed previously, we determine that Wycherley teaches or suggests the recited telephone lines. *See* Pet. 49-50 (relying on Wycherley for the additional limitation recited in claim 14).

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Petitioner asserts, relying on Mr. Occhiogrosso's testimony, that it would have been obvious to combine Vasile's voice buffers with Wycherley's relay service "to efficiently support multiple relay calls from a shared pool of call attendants." Pet. 49 (citing Ex. 1014 ¶¶ 55-56).

Mr. Ludwick acknowledges that Vasile discloses "a traditional relay operation well known in the art that uses buffering to store the voice data of the hearing user until a call assistant is connected to the call." Ex. 2010 ¶ 79. Mr. Ludwick, however, goes on to assert that "[i]n my opinion there is nothing in the Vasile patent that suggests or teaches any type of revoicing or speech recognition and there is no rationale to combine the Vasile reference with Wycherley and Yamamoto." *Id.*; *see also* PO Resp. 55 (repeating verbatim Mr. Ludwick's opinion).

Weighing Mr. Occhiogrosso's testimony against Mr. Ludwick's testimony, we credit Mr. Occhiogrosso's testimony, which provides a reason for combining the references ("to efficiently support multiple relay calls with a shared pool of call attendants"). Mr. Ludwick's testimony that "there is nothing in the Vasile patent that suggests or teaches any type of revoicing or speech recognition" does not provide sufficient facts to support his opinion that "there is no rationale to combine" the references. Ex. 2010 ¶ 79. Moreover, Mr. Ludwick does not challenge that Vasile's use of buffering to store the voice data of the hearing user until a call assistant is connected to the call could not be combined with Wycherley and Yamamoto according to known methods or would not yield predictable results. *See KSR*, 550 U.S. at 416 (stating "[t]he combination of familiar elements

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according to known methods is likely to be obvious when it does no more than yield predictable results”). Thus, we conclude Petitioner has articulated sufficient rationale for combining Wycherley, Yamamoto, and Vasile.

For the reasons set forth above, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 4, 13, and 14 would have been obvious over Wycherley, Yamamoto, and Vasile.

*4. Obviousness over Wycherley, Yamamoto, and Liebermann*

Petitioner asserts that claim 6 would have been obvious over Wycherley, Yamamoto, and Liebermann. Pet. 53-54 (referring to Pet. 52). Claim 6, which depends from claim 1, requires that (i) a single telephone line be used to communicate between the call assistant and the hearing person and between the call assistant and the deaf person and (ii) the digital text message stream and the voice of the hearing person both be transmitted over that single telephone line.

Petitioner relies on Liebermann for teaching or suggesting the single telephone line recited in claim 6. Pet. 52-53 (citing Ex. 1010, 6:30-35; 7:10-14, 29-44, 53-54). Liebermann describes an electronic communication system that includes (i) a video apparatus for digitizing signing motions of a deaf person, (ii) an electronic translator for translating the digitized signing motions into words and phrases, and (iii) an electronic output for the words and phrases. Ex. 1010, Abstract. Liebermann’s electronic communication system uses a central processing facility that processes information representative of sign language motions, made by the hearing-impaired person, to its verbal text equivalent. *Id.* at 5:7-11. The central processing

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facility also transforms speech from the normally hearing person to text, which, in turn, is transformed into sign language motions for display to the hearing-impaired person. *Id.* at 5:14-34.

Liebermann further describes a telephone that “is equipped with a microphone and a speaker instead of . . . a second telephone channel” and can be used for a hearing impaired person to communicate with a hearing person in close proximity. *Id.* at 7:29-35 (indicating a single telephone line can be used). “The signing motion of the deaf person [is] processed by the [central processing facility] and is transmitted back to the device as a normal voice transmission which the speaker renders as speech to the normally hearing person.” *Id.* at 7:35-39. The speech of the hearing person “is picked up by the microphone and sent to” the central processing facility for processing. *Id.* at 7:39-41; 5:18-20. The central processing facility sends the text as identifiers, which are converted into animated images, or as “animated sign language motions.” *Id.* at 5:25-34. “The result is an animated content on the [display] of the communicator which portrays in sign language the spoken content of the normally hearing person.” *Id.* at 7:35-43.

Based on the previous description of Liebermann, we determine that an embodiment of Liebermann’s communicator, through which a hearing impaired person communicates with a normally hearing person, uses a single telephone line (i) to communicate with a central processing facility to transmit the voice of the hearing person to the central processing facility,

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and (ii) to receive information equivalent to the animated content portraying sign language from the central processing facility.

Thus, we conclude this embodiment of Liebermann's communicator teaches or suggests a single telephone line used in communication between the call assistant (at Liebermann's center) and a hearing person, and between the call assistant (at Liebermann's center) and a deaf person. Liebermann also teaches or suggests text identifiers equivalent to animated content portraying sign language (the digital text message stream) are transmitted over the single telephone line. Liebermann further teaches or suggests transmitting the voice of the hearing person to the central processing facility. Accordingly, Liebermann teaches or suggests the additional limitation recited in claim 6—"a single telephone line of the telephone system used to communicat[e] between the call assistant and the hearing person and the call assistant and the deaf person, the digital text message stream and the voice of the hearing person both being transmitted over that single telephone line."

Patent Owner challenges this conclusion, indicating that Liebermann discloses a system involving two telephone lines. PO Resp. 46-47 (citing Ex. 1010, 6:64-7:3, Fig. 2). Patent Owner, however, does not acknowledge or otherwise sufficiently address Liebermann's express teaching of a single telephone line embodiment (Ex. 1010, 7:29-44), on which Petitioner relies.

Petitioner, relying on Mr. Occhiogrosso's testimony, contends it would have been obvious to combine Liebermann's communicator with Wycherley's relay "to improve the speed and efficiency with which the

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communicator of *Liebermann* could facilitate a conversation between a deaf person and a hearing person.” Pet. 54 (citing Ex. 1014 ¶¶ 58-59).

Patent Owner challenges Petitioner’s reason (PO Resp. 55-56), relying on Mr. Ludwick’s testimony that the Liebermann reference teaches an “extremely complicated system” and, based on his personal knowledge, “Mr. Liebermann’s invention was universally perceived to be non-workable” (Ex. 2010 ¶ 86). Accordingly, Patent Owner asserts that “a [person of ordinary skill in the art] would have dismissed the Liebermann reference out of hand.” PO Resp. 55 (citing Ex. 2010 ¶ 86).

We find credible Mr. Occhiogrosso’s articulated reasoning that has some rational underpinning. *See KSR*, 550 U.S. at 418 (“there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). We are not persuaded by Mr. Ludwick’s reasoning, which broadly criticizes Mr. Liebermann’s *invention* without providing underlying data or facts to support Mr. Ludwick’s conclusion about the Liebermann *reference*. *See* 37 C.F.R. § 42.65 (indicating expert testimony that does not disclose underlying facts or data on which the opinion is based is entitled to little or no weight).

Moreover, Mr. Ludwick alternatively bases his opinion that a person of skill in the art would have no reason to consider Liebermann on the “party” call embodiment of Liebermann that used two telephone lines. PO Resp. 56. The asserted combination of Wycherley, Yamamoto, and Liebermann, however, does not involve the two telephone line “party” call embodiment of Liebermann. Rather, the asserted combination relies on

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Liebermann's single telephone line embodiment. Thus, Mr. Ludwick's alternative rationale is not persuasive because it does not address sufficiently the combination asserted by the Petitioner.

We, therefore, determine that Petitioner has demonstrated by a preponderance of the evidence that claim 6 would have been obvious over Wycherley, Yamamoto, and Liebermann.

*5. Obviousness over Wycherley, Yamamoto, Liebermann, and Other References*

Each of dependent claims 9, 12, and 15 further recites a single telephone line limitation substantially similar to the limitation recited in claim 6. Petitioner asserts each of claims 9, 12, and 15 would have been obvious over Wycherley, Yamamoto, Liebermann, and another reference.

Specifically, Petitioner asserts claim 9, which depends from independent claim 7, would have been obvious over Wycherley, Yamamoto, Jones, and Liebermann. Pet. 55-56. Petitioner also asserts claim 12, which depends from independent claim 10, would have been obvious over Wycherley, Yamamoto, Choi, and Liebermann. *Id.* at 56-57. Petitioner further asserts claim 15, which depends from independent claim 13, would have been obvious over Wycherley, Yamamoto, Vasile, and Liebermann. *Id.* at 59.

For dependent claims 9, 12, and 15, Petitioner substantially relies on the same analysis and supporting evidence described previously that (i) claim 6 would have been obvious over Wycherley, Yamamoto, and Liebermann and (ii) each of independent claims 7, 10, and 13 would have



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been obvious over Wycherley, Yamamoto, and various other references.<sup>14</sup> *See id.* at 55-56, 57, 59. Petitioner also asserts that it would have been obvious to combine Liebermann with the references purportedly rendering each of the independent claims obvious for the same reasons it would have been obvious to combine the references asserted against each independent claim. *See* Pet. 55-56, 57, 59.

For the reasons we explained previously, we determine that Petitioner has demonstrated by a preponderance of the evidence that (i) claim 9 would have been obvious over Wycherley, Yamamoto, Jones, and Liebermann; (ii) claim 12 would have been obvious over Wycherley, Yamamoto, Choi, and Liebermann; and (iii) claim 15 would have been obvious over Wycherley, Yamamoto, Vasile, and Liebermann.

### III. CONCLUSION

Patent Owner's Motions to Exclude the testimony of Mr. Occhiogrosso and the Yamamoto reference are denied. Petitioner has proven by a preponderance of the evidence that claims 1-15 of the '482 patent are unpatentable on the following grounds:

A. Claims 1 and 5 as anticipated under 35 U.S.C. § 102(e) by Ryan;

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<sup>14</sup> Specifically, Petitioner asserts that independent claim 7 would have been obvious over Wycherley, Yamamoto, and Jones; independent claim 10 would have been obvious over Wycherley, Yamamoto, and Choi; and independent claim 13 would have been obvious over Wycherley, Yamamoto, and Vasile.

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B. Claims 1 and 5 as unpatentable for obviousness under 35 U.S.C. § 103(a) over the combination of Wycherley and Yamamoto;

C. Claims 2, 7, and 8 as unpatentable for obviousness under 35 U.S.C. § 103(a) over the combination of Wycherley, Yamamoto, and Jones;

D. Claims 3, 10, and 11 as unpatentable for obviousness under 35 U.S.C. § 103(a) over the combination of Wycherley, Yamamoto, and Choi;

E. Claims 4, 13, and 14 as unpatentable for obviousness under 35 U.S.C. § 103(a) over the combination of Wycherley, Yamamoto, and Vasile;

F. Claim 6 as unpatentable for obviousness under 35 U.S.C. § 103(a) over the combination of Wycherley, Yamamoto, and Liebermann;

G. Claim 9 as unpatentable for obviousness under 35 U.S.C. § 103(a) over the combination of Wycherley, Yamamoto, Jones, and Liebermann;

H. Claim 12 as unpatentable for obviousness under 35 U.S.C. § 103(a) over the combination of Wycherley, Yamamoto, Choi, and Liebermann; and

I. Claim 15 as unpatentable for obviousness under 35 U.S.C. § 103(a) over the combination of Wycherley, Yamamoto, Vasile, and Liebermann.

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#### IV. ORDER

Accordingly, it is hereby:

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that claims 1-15 of U.S. Patent No. 5,909,482 are unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude the testimony of Mr. Occhiogrosso (Paper 43) is denied;

FURTHER ORDERED that Patent Owner's Motion to Exclude the Yamamoto reference (Paper 44) is denied; and

FURTHER ORDERED that, because this is a final written decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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PETITIONER:

Brian W. Oaks  
Bryant C. Boren Jr.  
Harper S. Batts  
Adam F. Smoot  
Joseph Gray  
BAKER BOTTS L.L.P.  
brian.oaks@bakerbotts.com  
bryant.c.boren@bakerbotts.com  
harper.batts@bakerbotts.com  
adam.smoot@bakerbotts.com  
joseph.gray@bakerbotts.com

PATENT OWNER:

Michael Jaskolski  
Martha Snyder  
Nikia L. Gray  
Michael J. Curley  
QUARLES & BRADY LLP  
michael.jaskolski@quarles.com  
martha.snyder@quarles.com  
nikia.gray@quarles.com  
Michael.curley@quarles.com

Trials@uspto.gov  
Tel: 571-272-7822

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CAPTIONCALL, LLC,  
Petitioner,

v.

ULTRATEC, INC.,  
Patent Owner.

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Case IPR2013-00541  
Patent 5,909,482

Before WILLIAM V. SAINDON, BARBARA A. BENOIT, and  
LYNNE E. PETTIGREW, *Administrative Patent Judges*.

BENOIT, *Administrative Patent Judge*.

DECISION  
Denying Patent Owner's Request for Rehearing  
*37 C.F.R. § 42.71*

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Patent 5,909,482

## INTRODUCTION

CaptionCall, LLC (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–15 of U.S. Patent No. 5,909,482 (Ex. 1001, “the ’482 patent”). Paper 1 (“Pet.” or “Petition”). We instituted an *inter partes* review for claims 1–15. Paper 6. In our Final Written Decision, we determined that Petitioner had shown by a preponderance of the evidence that claims 1–15 were unpatentable. Paper 76 (“Final Dec.” or “Final Decision”). Patent Owner, Ultratec, Inc., requests a rehearing of the Final Decision by an expanded panel. Paper 77 (“Req.” or “Request”).

Having considered Patent Owner’s Request, we decline to modify our Final Decision and deny the Request for Rehearing.

## ANALYSIS

A request for rehearing must identify specifically all matters the party believes we misapprehended or overlooked, and the place where each matter was addressed previously in a motion, an opposition, or a reply. 37 C.F.R. § 42.71(d). Additionally, Patent Owner, as the party challenging the Final Decision, has the burden of showing the decision should be modified. *Id.*

We first address Patent Owner’s allegations of matters that we misapprehended or overlooked (Req. 1–14). We then address Patent Owner’s allegations of improper panel composition (*id.* at 1, 14–15).

### *Matters Allegedly Misapprehended or Overlooked*

Patent Owner alleges we misapprehended or overlooked matters involving the status of an asserted prior art reference, admission of evidence, claim construction, and evidence of secondary considerations. We address each issue in turn.

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*Status of Ryan as Prior Art*

In the Final Decision, in response to Patent Owner’s argument that Ryan<sup>1</sup> did not qualify as prior art because it was not enabled (Paper 28, 16–25 (“PO Resp.”)), we determined that Ryan was enabled prior to the date of invention of the challenged patent in 1997 and, therefore, qualified as prior art to the challenged claims. Final Dec. 23–28.

In its Request for Rehearing, Patent Owner argues, as it did in its Patent Owner Response, that for a patent to serve as prior art the patent must be enabled as to its own earliest claimed effective filing date in 1994. Req. 1–5; PO Resp. 16–20. We addressed this argument in the Final Decision and additionally examined the evidence of record as to whether Ryan would have enabled one of ordinary skill in the art to make the invention without undue experimentation prior to the date of invention of the challenged patent. Final Dec. 23–28. We are not persuaded that we overlooked or misapprehended Patent Owner’s prior argument or made an erroneous interpretation of law.

Patent Owner additionally argues that our consideration of Ryan as prior art as of the date of invention of the challenged patent (1997) was “substantially different than the adopted ground” at issue in the *inter partes* review because the Petition did not discuss this issue. Req. 2, 5 (“The Petition only discussed potential priority dates in 1994 and 1996, not 1997.”).

We disagree. As noted in our Decision to Institute, *inter partes* review was instituted for “[c]laims 1 and 5 as anticipated under 35 U.S.C. § 102 by Ryan.” Paper 6 (“Decision to Institute”), 30 (IV. ORDER).

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<sup>1</sup> U.S. Patent No. 5,809,112 (Ex. 1004).

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During the *inter partes* review, Patent Owner argued, in its Patent Owner Response, that Ryan did not anticipate the challenged claims (PO Resp. 16–38), including a challenge to the prior art status of Ryan noted previously (*id.* at 16–23). The Final Decision discussed the instituted ground of anticipation by Ryan and addressed Patent Owner’s assertions, including those regarding the prior art status of Ryan. Final Dec. 21–35.

In a similar vein, Patent Owner argues it should have received express notice “that enablement would be assessed in 1997” so it could submit evidence concerning enablement in 1997. Req. 6. We are not persuaded by this argument. First, Patent Owner expressly argued this issue in a section of its Patent Owner Response titled “Ryan Was Not Enabled At Any Point Before The Date Of Invention Of The [challenged patent].” PO Resp. 23 (Section VIII.B.2); *see id.* (asserting the date of invention of June 23, 1997). Thus, Patent Owner submitted arguments concerning enablement in 1997, the very issue about which Patent Owner now contends it was not informed and so missed the opportunity to submit relevant evidence. Moreover, as noted in our Final Decision, Patent Owner and Petitioner did not dispute that the “re-voicing limitation” was enabled on June 23, 1997, with the release of commercial voice recognition software to the public. Final Dec. 19–20 (citing PO Resp. 23; Reply 4; Exs. 2011, 2012, and 2013). As noted in our Final Decision, public availability of the commercial voice recognition software as of 1997 is corroborated by the challenged patent itself. Final Dec. 24–25 (quoting Ex. 1001, 5:50–57).

Patent Owner further asserts we overlooked evidence that the invention was conceived and diligently reduced to practice before Ryan was enabled. Req. 5–6 (citing Exs. 2011, 2012, 2013). We did not overlook this



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evidence. Rather, we examined this evidence in our Final Decision and found the evidence insufficient. Final Dec. 24 (“Patent Owner’s earliest proffered evidence dates back only to August 5, 1997, not to June 23, 1997,” when Ryan was enabled); *see id.* at 23–24 (analyzing Patent Owner’s evidence offered in Exhibits 2011, 2012, and 2013).

For these reasons, we are not persuaded that we overlooked or misapprehended Patent Owner’s prior argument or made an erroneous interpretation of law concerning the availability of Ryan as prior art to the challenged claims.

*Yamamoto Transcript*

Patent Owner contends we circumvented our own rules in admitting the transcript<sup>2</sup> of a videotaped interview with Mr. Seiichi Yamamoto, the first named author of the Yamamoto reference.<sup>3</sup> Req. 6–10; *see* Paper 61 (Decision on Petitioner’s Motion to Submit Supplemental Information). The interview was conducted in connection with a related district court proceeding between the parties. *See* Final Dec. 37–38. In the district court proceeding, the parties stipulated that the Yamamoto transcript—a stenographic record of the English portion of the interview (questions from both parties and an interpreter’s translation of Mr. Yamamoto’s testimony)—would be treated as sworn deposition testimony in the district court proceeding and, “[w]ith respect to other proceedings, the stenographic

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<sup>2</sup> Ex. 2018 (Videoconference Deposition of Seiichi Yamamoto, Aug. 20, 2014) (“Yamamoto transcript”).

<sup>3</sup> Yamamoto is a Japanese language document—Seiichi Yamamoto and Masanobu Fujioka, *New Applications of Voice Recognition*, Proc. JASJ Conf. (March 1996) (Ex. 1005; Ex. 1006 (English language translation)).

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record will be treated as a sworn deposition taken in [the district court proceeding] at which both parties appeared and had the opportunity to question the witness.” Ex. 1062 ¶ 5 (Stipulation Regarding Seiichi Yamamoto). As explained in our Final Decision, we granted Petitioner’s motion to submit the Yamamoto transcript as supplemental information under 37 C.F.R. § 42.123(b) relating to the prior art status of Yamamoto and, after supplemental briefing by the parties, determined the Yamamoto transcript was admissible. Final Dec. 36–41.

Patent Owner argues in its Request for Rehearing that the Yamamoto transcript is inadmissible because it does not satisfy the requirements that all testimony, other than uncompelled direct testimony, must be in the form of a deposition transcript, 37 C.F.R. § 42.53(a), and that the witness shall be sworn, 37 C.F.R. § 42.53(f)(1). Req. 7. Therefore, according to Patent Owner, the Yamamoto transcript was “not taken, sought, or filed in accordance with these regulations [and] is not admissible.” *Id.* (citing 37 C.F.R. § 42.61(a)). Rule 42.53, however, is titled “Taking Testimony” and applies only to testimony taken “during a testimony period set by the Board” for purposes of a particular review proceeding. 37 C.F.R. § 42.53(b); *see also* 37 C.F.R. § 42.53(c) (providing time limits set by the Board); *id.* § 42.53(d) (providing notice requirements). As stated in our Final Decision, Petitioner sought to admit the Yamamoto transcript as supplemental information, not as deposition testimony taken in this *inter partes* proceeding. Final Dec. 37. And based on the parties’ stipulation in district court, we treated the Yamamoto transcript as sworn deposition testimony taken in the district court. *Id.* at 38–41 (citing Ex. 1062 ¶ 5). Petitioner filed the Yamamoto transcript as supplemental information under

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37 C.F.R. § 42.123(b), establishing that the Yamamoto transcript reasonably could not have been obtained earlier and that its consideration was in the interests of justice. Paper 61, 7–8. Therefore, Petitioner’s filing of the Yamamoto transcript complied with Board rules, and we properly relied on it in determining the public accessibility of Yamamoto. *See* Final Dec. 36–41.

Tangentially to its contentions regarding the Yamamoto transcript, Patent Owner contends we improperly admitted Petitioner’s evidence regarding public accessibility of the Yamamoto reference in May 1996. Req. 9. Patent Owner’s contention is inapposite. We determined that the Yamamoto reference was publicly accessible in March 1996, not May 1996. Final Dec. 44. Further, in our Final Decision, we stated that “[b]ecause we conclude that Yamamoto was publicly accessible in March 1996, we need not address Petitioner’s argument and evidence regarding public accessibility in May 1996.” Final Dec. 45 n.13.

Having reviewed Patent Owner’s Request, we are not persuaded we misapprehended or overlooked any matter relating to the admissibility of the Yamamoto transcript or other evidence related to the Yamamoto reference.

### *Claim Construction*

Because the parties articulated different views on how “trained to the voice of the call assistant” should be interpreted relative to the asserted prior art, we analyzed Patent Owner’s implied constructions of the term and Patent Owner’s declarant’s testimony concerning the same. Final Dec. 8–10. In its Request for Rehearing, Patent Owner argues that we “misapprehended claim construction law” in determining software “trained to the voice of the call assistant” was not limited to training to the voice of

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one and only one particular call assistant and did not preclude voice recognition software that is designed or built in advance of implementation at the source code level to the voice of a call assistant. Req. 10–12.

First, Patent Owner contends that we erroneously relied on the Specification’s disclosure of “voice pattern.” Req. 10–12. We disagree that our reliance on the Specification’s “Brief Summary of the Invention,” which indicates “a speech recognition computer program which has been trained to the voice *pattern* of the call assistant,” was improper. *See* Final Dec. 8–9 (quoting Ex. 1001, 2:46–48 (emphasis added)). Rather, in our Final Decision, we contrasted the Specification’s use of “voice *pattern* of the call assistant” in its “Brief Summary of the Invention” with its use of “a voice recognition software package which is specifically trained to the voice of that *particular* call assistant” in the context of a particular embodiment of the invention shown in Figure 1. Final Dec. 8–9 (quoting Ex. 1001, 2:46–48, 5:44–47).

Based on the evidence in the Specification (including the Specification’s disclosure of “a voice pattern”), we determined that the Specification did not indicate expressly that the voice recognition software is trained to the voice of only that particular call assistant or otherwise indicate that the voice recognition software is trained for the voice of only one call assistant. Final Dec. 9. We concluded that “we will not limit ‘trained to the voice of the call assistant’ to require training to the voice of only one particular call assistant, because the claim language encompasses the invention as disclosed in the Specification—software trained to a voice *pattern* of a call assistant.” *Id.* at 10 (citing Ex. 1001, 2:41–49 (“Summary of the Invention”)).

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We turn next to Patent Owner's argument in its Request for Rehearing that we erred in concluding that "trained to the voice of the call assistant" does not include a temporal constraint that precludes voice recognition software that is designed or built in advance of implementation at the source code level to the voice pattern of a call assistant. Req. 12–13 (citing Final Dec. 8). According to Patent Owner, it did not have an opportunity to address this issue because it was raised after briefing had concluded. Req. 12–13.

On the contrary, a central dispute between the parties during the *inter partes* review was whether Ryan discloses "a digital computer . . . programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream," as recited in independent claims 1 and 5. Final Dec. 29 (citing Pet. 15–16, 18–19; PO Resp. 24–37). As noted in our Final Decision, Patent Owner argued in its Patent Owner Response that Ryan does not disclose the recited "voice recognition software trained to the voice of the call assistant" because Ryan discloses voice recognition software that is "designed." Final Dec. 32 (citing PO Resp. 26–27). More specifically, according to Patent Owner, Ryan discloses software that is designed in advance of implementation at the source code level and, therefore, the software is not trained to the voice of a call assistant. *Id.* Thus, Patent Owner initially raised in its Patent Owner Response the issue whether "trained to the voice of the call assistant" encompasses software designed in advance of implementation at the source code level. Therefore, we do not agree with Patent Owner that it did not have an opportunity to address this issue, which Patent Owner first raised itself.

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Along these lines, Patent Owner also asserts in its Request for Rehearing that we overlooked an alleged admission at the Hearing by Petitioner that the claim language inherently includes a temporal constraint that precludes training when the software is designed in advance of implementation at the source code level. Req. 12–13 (citing Paper 75 (Hearing Transcript), 17:3–5). We are not persuaded that we did so. Rather, we considered Petitioner’s statement at the Hearing in light of the evidence of record.

In our Final Decision, we determined that the Specification discloses that the voice recognition software package is trained but does not indicate when or how the training occurs. Final Dec. 9 (citing Ex. 1001, 2:46–48, 5:44–47). We rejected Patent Owner’s argument, relying on its declarant, that software “designed” is not software that is “trained to recognize individual voices” because we found insufficient support for Patent Owner’s contention. Final Dec. 9 (citing PO Resp. 27). As we explained in our Final Decision, Patent Owner’s declarant testified that a person of ordinary skill in the art would not have understood “trained” software to include “designed” software because technology to train software to recognize individual voices did not exist in 1994 and was not used in telecommunications relay service at that time. Final Dec. 9 (citing PO Resp. 27; Ex. 2010 ¶ 22). We weighed this testimony, which relied on capabilities of technology available in 1994, and concluded this testimony had little probative value of the understanding of one of ordinary skill in the art at the time of invention because the year of invention was 1997. Final Dec. 9. The weight we gave to Patent Owner’s declarant’s testimony reflected the parties’ agreement that commercial software to train software to recognize individual voices was available in

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1997, as discussed previously. *See* Final Dec. 24–25 (citing PO Resp. 23; Reply 4; Exs. 2011, 2012, and 2013). In other words, the understanding of one of ordinary skill as of 1997 was crucial given the shift in technology at that time, and Patent Owner’s declarant’s testimony was only reflective of the understanding prior to this technology shift.

Moreover, Petitioner’s declarant indicates that one of ordinary skill in the art would have understood that Ryan describes speech recognition software trained to the voice of a call assistant. Ex. 1053 ¶¶ 41–43. The testimony of Petitioner’s declarant is supported further by prior art of record that indicates voice recognition software trained to a particular user in relay systems was known. *See* Ex. 1053 ¶ 42 (citing Ex. 1002, 4:37–49). This testimony further undermines Patent Owner’s position.

Thus, we do not agree with Patent Owner that we erred by not considering Petitioner’s purported “admission” made at the Hearing. Rather, we considered Petitioner’s statement in determining that Ryan’s description of benefits provided by voice recognition software that “is specifically designed to recognize the voice of particular relay agents” (Ex. 1004, 4:33–38) disclosed the trained software recited in both claims of the ’314 patent. *See* Final Dec. 28–35.

For the reasons given, we are not persuaded that we misapprehended claim construction law or that Patent Owner was not provided with an opportunity to address claim construction of “trained to the voice of the call assistant.”

#### *Evidence of Secondary Considerations*

Patent Owner alleges that we improperly made a determination of obviousness before separately analyzing Patent Owner’s evidence of

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secondary considerations. Req. 13–14. We disagree. Rather, in Section II.E of our Final Decision, we determined the scope and content of the asserted prior art. Final Dec. 45–46. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). And we discussed the claimed subject matter relative to the asserted prior art, which included identifying differences between the claimed subject matter and the prior art in the context of the ordinary level of skill in the art and included a determination that Petitioner, with support of its declarant, had articulated a sufficient reason to support a conclusion of obviousness. Final Dec. 46–56; *see id.* In Section II.E, we also analyzed Patent Owner’s secondary considerations of nonobviousness. Final Dec. 56–60. Only after that discussion of obviousness in Section II.E of around fifteen pages did we discuss the ultimate conclusion of obviousness of the claimed subject matter. Final Dec. 60.

Unlike the International Trade Commission in *Apple Inc. v. International Trade Commission*, 725 F.3d 1356, 1365 (Fed. Cir. 2013), cited by Patent Owner in its Request, we considered evidence relating to the *Graham* factors—including objective evidence of secondary considerations presented by Patent Owner—before determining the ultimate issue of obviousness. *Compare* Req. 13 *with* Final Dec. 45–60; *see Apple*, 725 F.3d at 1365 (“The ITC, however, never mentioned, much less weighed as part of the obviousness analysis, the secondary consideration evidence . . . presented.”). As noted in our Final Decision, we determined that:

Accordingly, Patent Owner fails to provide sufficient credible evidence to support its allegations of nonobviousness based on secondary considerations. When we balance Petitioner’s



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evidence of obviousness against Patent Owner's asserted objective evidence of nonobviousness, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 5 would have been obvious over Wycherley and Yamamoto.

Final Dec. 60. Thus, we recognized that the "ultimate conclusion of obviousness is a legal conclusion to be reached after weighing all the evidence on both sides." *Apple*, 725 F.3d at 1365.

*Testimony of Patent Owner's Declarant*

Patent Owner alleges we improperly dismissed Patent Owner's declarant's personal observations that secondary considerations of nonobviousness were commensurate in scope with the claimed subject matter. Req. 13–14. Patent Owner asserts that its declarant's testimony consisted of personal observations by an expert witness. Req. 14.

As noted in our Final Decision, to show the requisite nexus, Patent Owner relied on its declarant's testimony describing his visit to CapTel, Inc.'s relay center in Madison, Wisconsin. Final Dec. 59 (citing Ex. 2002 ¶ 47). We found Patent Owner's declarant's "conclusory assertions do not provide a sufficient connection between objective evidence and the claimed invention, and so do not establish the requisite nexus between the merits of the claimed invention and the evidence of secondary considerations." Final Dec. 59–60.

We did not dismiss this testimony; rather, we found it insufficient. To illustrate this insufficiency, in our Final Decision, we cited an example of the testimony provided for the disputed limitation "a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call

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assistant to translate the words spoken in voice by the call assistant into a digital text stream”:

I personally observed that the CapTel Service meets this claim element. I further confirmed this from my own knowledge of CapTel Service. This feature of the CapTel Service relay is present when the Service is used with each of the CapTel Phones and has always been included as part of the CapTel Service.

Final Dec. 59 (citing Ex. 2002 ¶ 48 (page 28)). We found that, because the declarant’s conclusions were based on personal observations, without sufficient supporting facts or data, his testimony provided little probative value. Final Dec. 59.

We reject Patent Owner’s assertion that, because there is no testimony to the contrary, we must accept its declarant’s “personal observations” on the claimed features being present in the system provided by CapTel Service and thereby conclude a nexus exists. Req. 14. We cited proper authority in the Final Decision for why we gave little probative value to this testimony of Patent Owner’s declarant—such “conclusory assertions do not provide a sufficient connection between objective evidence and the claimed invention.” Final Dec. 59 (citing *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) (“[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.”)).

### *Conclusion*

Having reviewed Petitioner’s Request, we are not persuaded we misapprehended or overlooked any matter.

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*Alleged Panel Composition Errors*

Patent Owner requests rehearing before an expanded panel and additionally asserts we exceeded our authority by issuing a Final Written Decision “with less than a full panel.” Req. 1, 14–15. Panel composition for an *inter partes* review is specified in 35 U.S.C. § 6(c), which states “[e]ach . . . inter partes review shall be heard by at least 3 members of the Patent Trial and Appeal Board, who shall be designated by the Director.” The Director’s authority under 35 U.S.C. § 6 to designate panels has been delegated to the Chief Judge. *See* Patent Trial and Appeal Board Standard Operating Procedure 1 (Rev. 14) (May 8, 2015) (“PTAB SOP 1”).

As acknowledged by Patent Owner (Req. 14–15), the Final Decision was decided by three administrative patent judges, who are members of the Board. *See* 35 U.S.C. § 6(a) (indicating that administrative patent judges, along with various members of the United States Patent and Trademark Office, constitute the Patent Trial and Appeal Board). The three administrative patent judges were designated by the Chief Judge according to PTAB SOP 1, titled “Assignment of Judges to Merits Panels, Interlocutory Panels, and Expanded Panels.” The Board, therefore, complied with the statutory requirements for panel composition. Accordingly, we did not issue the Final Decision with less than a “full panel,” as Patent Owner contends.

Moreover, the Chief Judge has discretion to designate judges to decide *inter partes* reviews. *See* PTAB SOP 1 at 2 (§ II.D) (“In general, the Chief Judge will designate a judge or judges, as appropriate, for all matters for AIA reviews.”); *see also AOL Inc. v. Coho Licensing LLC*, Case IPR2014-00771, slip op. at 2 (PTAB Mar. 24, 2015) (Paper 12)

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(informative) (setting forth that the designation of panel members is within the sole authority of the Chief Judge, as delegated by the Director). Patent Owner's Request, therefore, does not show the composition of the panel that issued the Final Decision was arbitrary, capricious, or an abuse of discretion by the Board.

Patent Owner suggests an expanded panel is warranted to decide the Request in view of the panel composition and various allegations that we misapprehended the law. Req. 1. For the reasons given, Patent Owner does not persuade us that we misapprehended the law or the panel of three judges was deficient. Further, the Board's procedures provide examples of reasons for expanding a panel, none of which apply here. PTAB SOP 1 at 3 (§ III.A). For example, an expanded panel may be appropriate when "serious questions have been raised about the continuing viability of an apparently applicable precedential decision of the Board, or a panel of the Board renders a decision that conflicts with a precedential decision of the Board or an authoritative decision of the Board's reviewing courts." *Id.* Patent Owner's Request does not show a conflict or other reason that weighs in favor of panel expansion. Even so, the panel informed the Chief Judge, who has authority to expand a panel, of Patent Owner's request, and the Chief Judge declined to expand the panel. *See* PTAB SOP 1 at 4 (§ III.B). ("The Chief Judge will determine when an expanded panel is to be designated."); *see also Apple Inc. v. Rensselaer Polytechnic Inst.*, Case IPR2014-00319, slip op. at 2 n.1 (PTAB Dec. 12, 2014) (Paper 20) (indicating only the Chief Judge, acting on behalf of the Director, may act to expand a panel and panels do not authorize panel expansion).

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ORDER

It is hereby ORDERED that Petitioner's Request for Rehearing is *denied*.

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PETITIONER:

Brian W. Oaks  
Bryant C. Boren Jr.  
Harper S. Batts  
Adam F. Smoot  
Joseph Gray  
BAKER BOTTS L.L.P.  
brian.oaks@bakerbotts.com  
bryant.c.boren@bakerbotts.com  
harper.batts@bakerbotts.com  
adam.smoot@bakerbotts.com  
joseph.gray@bakerbotts.com

PATENT OWNER:

Michael Jaskolski  
Martha Snyder  
Nikia L. Gray  
Michael J. Curley  
QUARLES & BRADY LLP  
michael.jaskolski@quarles.com  
martha.snyder@quarles.com  
nikia.gray@quarles.com  
Michael.curley@quarles.com

**United States Patent** [19]  
**Engelke**

[11] **Patent Number:** **5,909,482**  
 [45] **Date of Patent:** **Jun. 1, 1999**

[54] **RELAY FOR PERSONAL INTERPRETER**

5,289,523 2/1994 Vasile et al. .... 379/88.14

[75] Inventor: **Robert M. Engelke**, Madison, Wis.

*Primary Examiner*—Curtis A. Kuntz

[73] Assignee: **Ultratec, Inc.**, Madison, Wis.

*Assistant Examiner*—George Eng

*Attorney, Agent, or Firm*—Quarles & Brady LLP

[21] Appl. No.: **08/925,558**

[57] **ABSTRACT**

[22] Filed: **Sep. 8, 1997**

A relay is described to facilitate communication through the telephone system between deaf people and hearing people. To overcome the speed limitations inherent in typing, the call assistant at the relay does not type most words but, instead, re-voices the words spoken by the hearing person into a computer operating a voice recognition software package trained to the voice of that call assistant. The conversation-type flow of communications achieved by this type of relay enables the design of a new class of interpreters for the deaf.

[51] **Int. Cl.**<sup>6</sup> ..... **H04M 11/00; H04M 1/64**

[52] **U.S. Cl.** ..... **379/52; 379/88.14; 379/93.15**

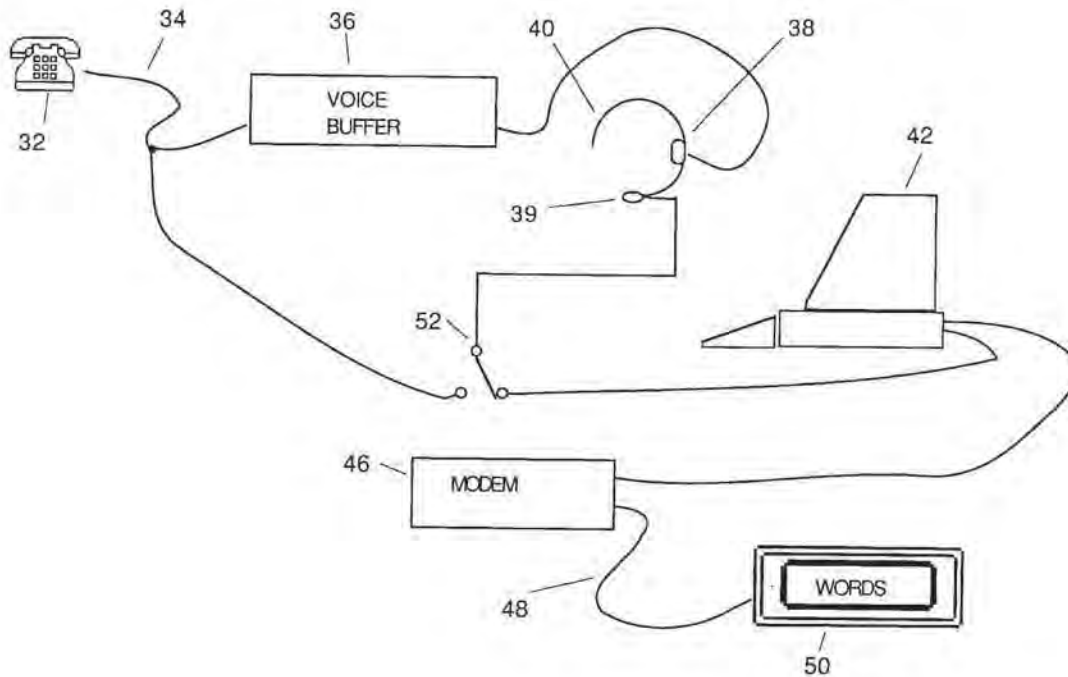
[58] **Field of Search** ..... 379/52, 88.14,  
 379/93.05, 93.09, 93.14, 93.15; 340/825.19;  
 704/235, 246, 270, 271

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

5,163,081 11/1992 Wycherley et al. .... 379/52

**15 Claims, 2 Drawing Sheets**



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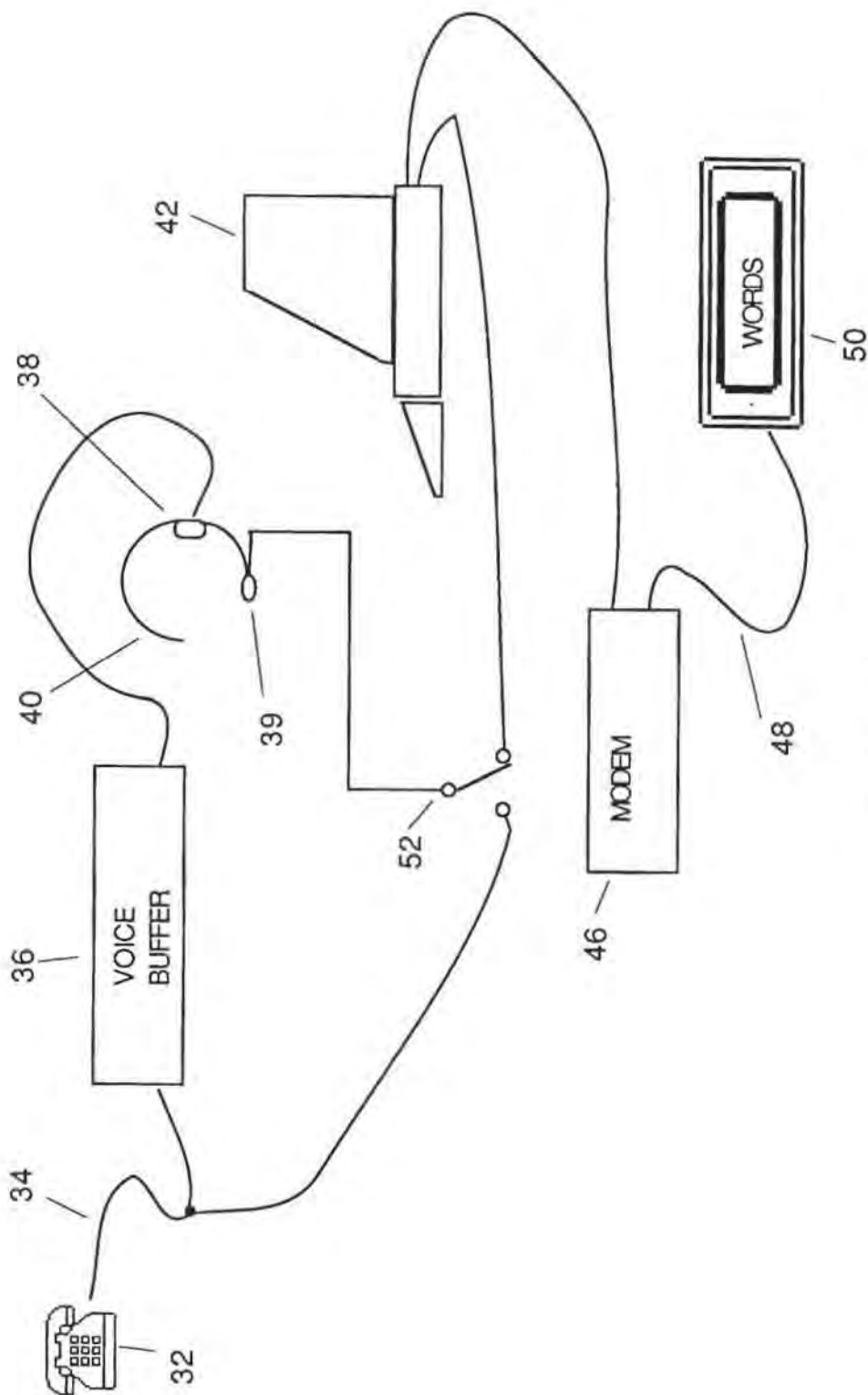


FIG. 1



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FIG. 2

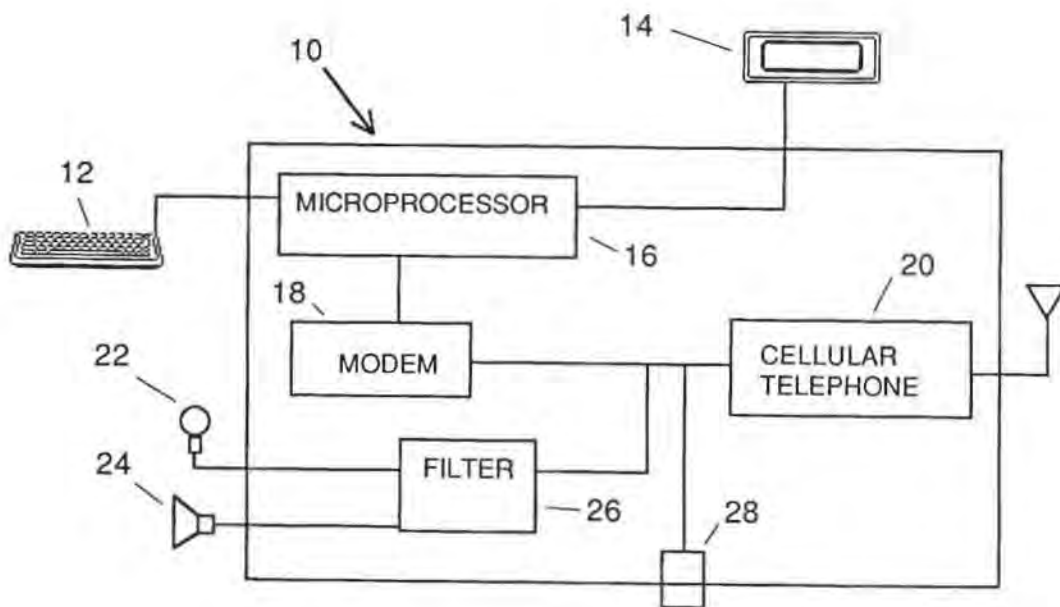


FIG. 3

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**RELAY FOR PERSONAL INTERPRETER****CROSS-REFERENCE TO RELATED APPLICATIONS**

Not applicable.

**STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT**

Not applicable.

**BACKGROUND OF THE INVENTION**

The present invention relates to the general field of telephone communications. In more particular, the invention relates to systems to assist telephone communications by those persons who are deaf, hard of hearing, or otherwise have impaired hearing capability.

Most modern human communications in both social and business environments takes place through sound communications. Yet within modern society there are many persons who have attenuated hearing capability. To assist those persons in making use of our telephonic communication system built for the hearing majority, there has been developed a system of telephone communication which has been principally used by the deaf community. That system makes use of a category of device known variously as a telecommunication device for the deaf (TDD), text telephone (TT) or teletype (TTY). Current TDDs are electronic devices consisting of a key board and a display as well as a specific type of modem, to acoustically or directly couple to the telephone line. Modern TDDs permit the user to type characters into their keyboard, with the character strings then encoded and transmitted over the telephone line to be displayed on the display of a communicating or remote TDD device.

Most TDD communication is conducted in an idiosyncratic code specific to the community of TDD users. This code, known as Baudot, evolved historically at a time when many telecommunication devices for the deaf were based on mechanical or electromechanical devices rather than the current technology based on digital electronic components. Accordingly, the Baudot protocol was constructed for a set of constraints which are no longer relevant to present day devices. The original Baudot protocol was a unidirectional or simplex system of communication conducted at 45.5 Baud. The conventional Baudot character set was a character set consisting of 5 bit characters and the system encodes the bits of those characters in a two-tonal system based on carrier tones of 1400 and 1800 Hertz.

The system of TDD communications is widely used and in fact has become indispensable to the deaf community throughout the industrialized world. Deaf persons extensively communicate with their neighbors and with other deaf and hearing people remotely, using the TDD system. In addition, systems have been developed to facilitate the exchange of communication between the deaf community and hearing users who do not have access to or utilize a TDD device. In the United States, telephone companies have set up a service referred to as a "relay." A relay, as the term is used herein, refers to a system of voice to TDD communication in which an operator, referred to as a "call assistant," serves as a human intermediary between a hearing user and a deaf person. Normally the call assistant wears a headset that communicates by voice with the hearing user and also has access to a TDD device which can communicate to the deaf user using a TDD appropriate protocol. In normal relay

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operations in the prior art, the call assistant types at a TDD keyboard the words which are voiced to her by the hearing user and then voices to the hearing user the words that the call assistant sees upon the display of his or her TDD. The call assistant serves, in essence, as an interpreting intermediary between the deaf person and the hearing person to translate from voice to digital electronic forms of communication.

A limitation in the effectiveness of current relay protocols is the necessity for the call assistant simply to type what is said. Typical call assistants can usually type reasonably well, typically in the range of 30 to 50 words per minute. While systems exist which permit the digital encoding of verbal communications at a faster rate, such as court stenography used in the legal system, such systems require extensive special training and are impractical for the numerous call assistants required by the relay systems in operation today. This limitation on the speed of conversion from speech to digital communications hampers the effective flow of communication in a relay call between the hearing person and a deaf person, since most hearing people speak at a rate which is higher than most call assistants can type. In addition, since conventional Baudot communications is unidirectional, the flow of conversation in a relay assisted communication session can be somewhat awkward. For example, first the hearing person must voice a statement or question. Then the calling assistant must type that statement or question, which is then transmitted at Baudot speeds, which are slower than normal human voice communication, to the deaf person. The deaf person waits until the entire statement or question is transmitted to him or her, after which he or she composes a response and types it in at his or her TDD. Then the communication flows backward to the call assistant who must voice to the hearing person what the deaf person has typed at his or her terminal. This process enables a degree of two-way communication between a deaf person and a hearing person, but the system tries the patience of the hearing person, since it is typically not conducted at a pace anywhere close to normal human communications.

**BRIEF SUMMARY OF THE INVENTION**

The present invention is summarized in that a relay system to facilitate the translation of information and communication between deaf and hearing persons includes a call assistant who re-voices the words of the hearing person which are spoken to the call assistant. The words spoken by the call assistant are recognized by a speech recognition computer program which has been trained to the voice pattern of the call assistant, such that the words are promptly translated into a high speed digital communication protocol. That high speed digital communication message is then transmitted electronically promptly by telephone to a visual display accessible to the deaf person.

It is an advantage of the invention described herein that the call assistant does not have to type most, if any, of the words spoken by the hearing person in the communication session so that the overall speed of communications from the hearing person to the deaf person is dramatically increased.

It is an object of the present invention that the design and utilization of a relay operated in accordance with the protocols described herein permits the introduction of small hand-held personal interpreter which will enable on the spot communications between deaf persons and hearing persons wherever the deaf persons might go.

Other objects, advantages and features of the present invention will become apparent from the following specification when taken in conjunction with the accompanying drawings.



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BRIEF DESCRIPTION OF THE SEVERAL  
VIEWS OF THE DRAWINGS

FIG. 1 is a schematic block diagram of a relay operated in accordance with the present invention.

FIG. 2 is an exterior view of a personal interpreter enabled by the relay of FIG. 1.

FIG. 3 is a schematic block diagram of the personal interpreter of FIG. 2.

DETAILED DESCRIPTION OF THE  
INVENTION

The present invention is directed toward a relay system, and a method for operating a relay system, so as to provide more conversation-like performance of voice to text interpreting for translating between deaf and hearing users. The improvements to the relay system and method of operating the relay described herein are applicable to the broad TDD community and to all the applications in which a relay is normally used. However, since the advantages of this system are most clear in view of its usefulness in enabling the advent of the truly portable personal interpreter for the deaf, a brief diversion to discuss what this device is and how the relay may enable its practical use is appropriate here.

Shown in FIG. 2 is an illustration of what a personal interpreter 10 can look like. This would be a small hand held device typically the size of a small hardbound book. It would have a keyboard of minimal size, but useable by a deaf person who can type. It would have a two to four line display, but the display could be any size that conveniently fits in the case of the device. The device would also have a key or switch which would initiate its operation.

Shown in FIG. 2 is a schematic block diagram of the internal mechanics of the personal interpreter. The personal interpreter keyboard shown at 12 and its display as shown at 14. Inside the interpreter itself is a microprocessor shown at 16. Not shown, but included within the personal interpreter, would be the appropriate memory and interface devices so as to allow the microprocessor to be programmed and to operate the personal interpreter and perform its functions, in a manner well known in the art. Also inside of the personal interpreter is a modem 18. The modem 18 is preferably a modem specifically designed for interface with the deaf telecommunications system. Most telecommunications with the deaf community are conducted using a Baudot type code. It is preferred that the mode be designed to use the enhanced form of Baudot communication known as "Turbo Code" (Ultratec), which is generally described in U.S. Pat. Nos. 5,432,837, No. 5,517,548, and 5,327,479, the disclosure of which is hereby incorporated by reference. It is even more preferred that the modem use a new variant of Turbo Code, one which uses higher carrier frequencies (in the range of 3000-3500 hertz) and a faster baud rate (over 100 baud). The output of the modem is preferably wired to a cellular telephone 20 included within the case of the personal interpreter 10. The cellular telephone 20 has a suitable antenna provided on it so that it may dial a cellular telephone network by radio frequency communications of the type normally conducted by cellular telephones. The personal interpreter also includes jack 28 to connect to a conventional wired or land-line telephone line as well. The personal interpreter also include a microphone 22 and a speaker 24. A filter 26 connects the speaker 24 and the microphone 22 to the telephone 20.

A brief description of the operation and functionality of the personal interpreter reveals the dramatic improvement

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and convenience and portability that this device gives to deaf people. A deaf user could go into an establishment, be it a government office or retail facility, in which there are only hearing persons. The deaf person would carry with him or her the personal interpreter 10. The deaf person would then place the personal interpreter 10 upon a counter or other surface, open it up, and press the initiation key or start button. The microprocessor 16 and modem 18 of the personal interpreter then power up and act in many ways like a normal TDD device operating in telecommunication standard, such as Turbo Code. However, there is one critical difference. The start or initiation key further causes the microprocessor 16 of the personal interpreter to dial a relay to set up a relay communication session and includes in its communication with the relay a message, using the enhanced command features available in advanced telecommunication protocols, such as Turbo Code, to initiate a special format of relay call adapted for the personal interpreter. Other codes which permit command functions, such as ASCII or CCITT, could also be used. The first operation is to activate the cellular telephone and direct the cellular telephone to dial the number of a relay operating in accordance with the method of the present invention. The cellular telephone dials the relay. Obviously, no wired connection is required to allow the cellular telephone function to establish a telephone connection with the remote relay, but alternatively the jack 28 to a conventional telephone line could be used. In addition, when the relay answers the telephone connection, the microprocessor 18 of the personal interpreter 10 is instructed to provide command codes to the remote relay. These command codes, a feature possible through the use of Turbo Code, permits the personal interpreter to tell the relay that this is a personal interpreter-type relay communication session. All of this can happen in the time necessary to initiate the cellular call, perhaps two to ten seconds.

Then, the deaf person can use the personal interpreter to translate words spoken by hearing persons in the presence of the personal interpreter into visually readable text. This is done by the personal interpreter 10 through an unseen relay. Words spoken by the hearing persons in the presence of the personal interpreter 10 are picked up by the microphone 22. Those words are then transmitted through the cellular telephone 20 to the remote relay. The relay, operating as will be described below, then immediately transmits back, in enhanced Turbo Code, a digital communication stream translating the words that were just spoken. The words are received by the modem 18, and the microprocessor 16 in the personal interpreter 10, and it is displayed promptly upon the display screen 14. If the deaf person can speak, he or she may then answer the hearing person with a spoken voice, or, the deaf person may alternatively type upon the keyboard 12. If the deaf user types on the keyboard 12, the personal interpreter transmits the communication by digital communication to the relay. The call assistant at the relay then reads and speaks the words typed by the deaf user which are transmitted to the speaker 22 contained in the personal interpreter into a voice communication which can be understood by the hearing users. The filter 26 filters out the digital communication frequencies from the sound generated by the speaker 22. Thus, in essence, the deaf person has a personal interpreter available to him or her at all times of the day or night wherever the deaf person is within the range of the cellular telephone system. Also, because the relay is preferably operating in accordance with the fast translation methodology described below, a very conversation-like feel can occur in the communication session between the deaf



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user and the hearing persons in the presence of the personal interpreter 10. In order for this communication session to be satisfactory to the hearing users as well as the deaf person, however, the relay must operate exceedingly rapidly. It is, in part, to meet the need for the exceeding rapidity of this conversational style of communication that the relay protocol of the present invention has been designed.

Shown in FIG. 1 is a relay intended to provide that capability. FIG. 1 is intended to show, in schematic fashion, how such a relay system can be set up. Shown at 32 is a telephone of a speaking person. Instead of a telephone of a speaking person, the input could also be the microphone of the personal translator 10 shown in FIGS. 2 and 3. The telephone of the speaking person 32 is connected through a telephone line 34 to a voice input buffer 36 at the relay. The telephone line 34 can be an actual physical land line, or two pair between the telephones, or can be a cellular or other over-the-air telephone linkage. The voice input buffer 36 is a simple buffer to ensure temporary capture of the voice in the event that the call assistant gets behind and needs to buffer or delay the voice of the speaking person. In any event, the output of the input voice buffer 36 is provided to a headset 40 where earphones 38 produce the sound of the remote speaking person in the ear of the call assistant. The call assistant is wearing the headset 40 and sitting at a computer 42 capable of communicating in an enhanced Baudot communication, such as Turbo Code or whatever other code protocol is being used. However, typically the call assistant does not type the words which the call assistant hears in his or her earphone 38. Instead, the call assistant then speaks the words which he or she hears in the earphones 38 into a microphone 39 in the headset 40. The microphone 39 on the headset 40 is connected to transmit the voice of the call assistant to the computer 42 at which the call assistant sits.

The computer 42 has been provided with a voice recognition software package which can recognize the spoken voice of the call assistant and immediately translate words spoken in that voice into a digital text communication stream. It is a limitation of currently available speech recognition software that the software must be trained or adapted to a particular user, before it can accurately transcribe what words the user speaks. Accordingly, it is envisioned here that the call assistant operates at a computer terminal which contains a copy of a voice recognition software package which is specifically trained to the voice of that particular call assistant. It is also important that the voice recognition system be capable of transcribing the words of the voice of the call assistant at the speed of a normal human communication. It has been found that a recently available commercial voice recognition package from Dragon Systems, known as "Naturally Speaking," is a voice recognition software which will accomplish this objective and which will translate to digital text spoken words of a user at the normal speeds of human communication in conversation when operating on conventional modern personal computers.

The computer terminal 42 of the call assistant then translates the text created by the voice recognition software to a modem 46 out through a telephone line 48 back to the display 50 located adjacent to the deaf person. The display 50 can be a conventional TDD located at the home of the remote deaf user, or can be the display 14 of the personal interpreter 10.

For reasons that will become apparent, there is also a connection from the microphone 39 of the headset 40 of the call assistant to the incoming telephone line 34 through a

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switch 52. The switch 52 can physically be an electrical switch located between the microphone 39 and the telephone lines 34 and the computer 42 or, as an alternative, it can be a software switch operating in the computer 42 which passes the voice of the user through to the telephone lines as voice, or not, under conditions which are selected by the call assistant, by choices he or she makes at the keyboard 44 of the computer 42. The switch 52 is functionally a single pole double throw switch although, of course, if this function is performed by the computer it will be a logical not a physical switch. In the simplest embodiment, the switch 52 is a simple single pole dual throw foot switch readily accessible to the call assistant which passes the voice of the call assistant from the microphone either out onto the telephone line 34 or to the computer 42.

It is a further enhancement to the operation of the relay constructed in accordance with the present invention that the earphones 38 have noise attenuating capability. Noise canceling earphones are commercially available today or, for this purpose, the computer 42 can be provided with noise canceling sound generation software which would create sound transmitted to the earphone 38 so as to cancel the sounds of the call assistant's own voice. The noise attenuation or cancellation avoids distracting the call assistant, since he or she would then be less distracted by the words that he or she has spoken, and thus would be less likely to be distracted from the concentration of the task of re-voicing the sounds of the voice heard in the call assistant's ear.

Similarly, another option which would be advantageous is that the software providing for the creation of the digital text string by voice recognition be buffered in its output flow to the modem 46. Before the computer 42 would pass the data on to the modem 46, the data would first be displayed on the computer screen of the computer 42 for review by the call assistant. The purpose of this option would be to permit the call assistant to use the keyboard to spell or correct hard-to-spell words, or to create corrections of any misinterpretations created by the voice recognition software, from the words spoken by the call assistant. It is anticipated that if such an option is utilized, it would require fairly infrequent use of the keyboard by the call assistant, since frequent use would clearly slow down the through-put of the communications.

The relay of FIG. 1 can operate with normal TDDs or with a personal interpreter as shown in FIGS. 2 and 3. In either event, the hearing person speaks in the telephone 32 and the words are transmitted through the telephone line 34 to the voice buffer 36. The voice buffer 36, again operating under the control of the call assistant, would buffer the voice signals from the hearing user as needed for the call assistant to keep up. The call assistant would hear the voice of the hearing user through the earpiece 38 and then would re-voice those same words into the microphone 39. The words that the user speaks into the microphone 39 would be fed to the computer 42 where the voice recognition software, trained to the voice of the call assistant, would translate those words into a digital text stream. The digital text stream would be turned into a digital communication stream by the modem 46 and passed on the telephone line 48 to a display 50 which can be observed by the deaf user. Experience has shown that using currently available technology the delay between the time the hearing user speaks into the telephone 32 and the time the words appear on the display 50 of the deaf user is a modest number of seconds.

In the reverse, when the deaf user types onto his or her telecommunication device, the digital signals are transmitted to the computer 42 which displays them for the call assistant



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who then voices those words into the microphone 39 which words are then transmitted onto the telephone line 34. Note that the presence of the switch 52 is therefore important in this mode. Since the voice of the call assistant serves two different functions in the operation of this system, the signal on the call assistant's voice must be switched so that the hearing user 32 only hears the voice for the communications which are intended to be directed to that person. The switch 52 allows for the voice of the call assistant only to be directed to the hearing person at the appropriate times.

Note that if the relay of FIG. 1 is used to facilitate a translation based on a personal interpreter such as that shown in FIGS. 2 and 3, there will be only one telephone line between the personal interpreter and the call assistant. In essence, in a modification of FIG. 1, the telephone 32 and the display 50 would both be within the personal interpreter 10. There would be only one telephone line, a cellular link, between the personal interpreter 10 and the call assistant. Note, therefore, that the voice of the call assistant and the digital communications created by the computer 42 would then travel on that same telephone linkage to and from the personal interpreter 10. It is therefore important for this embodiment that the personal interpreter 10 have appropriate filtering (i.e. the filter 26) to filter out the digital communication carrier frequencies of the digital communication protocol, so that they are not heard by hearing listeners in the presence of the personal interpreter 10. The telephone line must still carry voice signals, however, so that the spoken words articulated by the call assistant in response to digital instructions from the deaf user can be properly broadcast by the speaker contained within the personal interpreter.

The provision for filtering of the digital frequencies can be done in any number of ways with two being the principal preferred methodologies. If Turbo Baudot communications are conducted at the conventional Baudot frequencies of 1400 and 1800 Hertz, the personal interpreter 10 could be provided with notch filters 26 to filter out signals at those particular frequencies. It has been found that such notch filters still permit the transmission of audible and understandable human speech, even if they filter at those particular frequencies. As an alternative, it is possible to change the Baudot frequencies to those which are much higher, such as frequencies of 3000 to 3500 Hertz. If this alternative is selected, the personal interpreter 10 is then provided with a low pass filter which permits low frequency sounds to go to the speaker to be broadcast into the environment of the personal interpreter, while high frequencies are excluded.

It has been found in actual human tests that utilizing the revoicing methodology combined with speech recognition by the call assistant results in a through put of communication two to four times faster than the typing which can be achieved by a normal call assistant operating a keyboard. This is a dramatic improvement in the social acceptability of deaf to hearing person translation systems. While deaf users are accustomed to the delays inherent in TDD communications, hearing users are not. The provision for the faster throughput through a relay system such as provided by the relay of FIG. 1 allows for more conversation-like interchange between deaf persons and hearing persons than was heretofore possible. The relay of FIG. 1 also enables, for the first time, a personal interpreter of the type illustrated at 10 in FIGS. 2 and 3 to be available to deaf users who can then get on the spot interpreting virtually anywhere. This offers a freedom and functionality to deaf users which was not heretofore possible in the art.

It is to be understood that the present invention is not limited to the particular illustrations and embodiments dis-

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closed above, but embraces all such modified forms thereof as come within the scope of the following claims.

I claim:

1. A method of operating a relay system using a call assistant to facilitate communication between a deaf person and a hearing person by telephone comprising the steps of transmitting the voice of the hearing person when speaking to the ear of the call assistant;

the call assistant speaking in voice the same words that the call assistant hears spoken by the hearing person into a microphone connected to a digital computer;

the digital computer using voice recognition computer software trained to the voice of the call assistant to translate the words of the voice spoken by the call assistant into a digital text message stream containing the words spoken by the call assistant;

transmitting the digital text message stream created by the computer by telephone connection to a telecommunication device within sight of the deaf person; and

the telecommunication device displaying in visually readable text the words in the digital text message stream.

2. A method as claimed in claim 1 further comprising the step of using the voice spoken by the call assistant to create a noise canceling signal also transmitted to the earphone of the call assistant so that the call assistant hears less of his or her own spoken voice.

3. A method as claimed in claim 1 further comprising a switch to switch the relay between one mode in which the voice of the call assistant is transmitted to the computer and another mode in which the voice of the call assistant is not transmitted to the computer but is instead transmitted over the telephone system to the hearing person.

4. A method as claimed in claim 1 further comprising the step of buffering the voice of the hearing person between the telephone system and the earphone of the call assistant selectively under the control of the call assistant.

5. A method as claimed in claim 1 wherein there are separate telephone lines of the telephone system used for communicate between the call assistant and the hearing person and the call assistant and the deaf person.

6. A method as claimed in claim 1 wherein there is a single telephone line of the telephone system used to communication between the call assistant and the hearing person and the call assistant and the deaf person, the digital text message stream and the voice of the hearing person both being transmitted over that single telephone line.

7. A relay to facilitate communication between a deaf person using a telecommunication device for the deaf and a hearing person through a telephone system and using a call assistant, the relay comprising

a speaker connected to receive voice communications from the telephone system and transmit those voice communications to the ear of the call assistant;

a microphone connected to pickup voice spoken by the call assistant;

a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream;

a modem to transit the digital text stream created by the computer over the telephone system to the telecommunication device for the deaf of the deaf person; and

noise attenuating means responsive to the voice spoken by the call assistant and connected to the speaker to

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attenuate the noise of the voice of the call assistant from the sounds heard in the ear of the call assistant.

8. A relay as claimed in claim 7 wherein there are separate telephone lines of the telephone system connected between the call assistant and the hearing person and the call assistant and the deaf person.

9. A method as claimed in claim 7 wherein there is a single telephone line of the telephone system used to communicate between the call assistant and the hearing person and the call assistant and the deaf person, the digital text message stream and the voice of the hearing person both being transmitted over that single telephone line.

10. A relay to facilitate communication between a deaf person using a telecommunication device for the deaf and a hearing person through a telephone system, the relay operated by a call assistant, the relay comprising

a speaker connected to receive voice communications from the telephone system and transmit those voice communications to the ear of the call assistant;

a microphone connected to pickup voice spoken by the call assistant;

a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream;

a modem to transit the digital text stream created by the computer over the telephone system to the telecommunication device for the deaf of the deaf person; and

a switch to alternatively connect the voice of the call assistant to the computer or to the telephone system for transmission to the hearing person.

11. A relay as claimed in claim 10 wherein there are separate telephone lines of the telephone system connected between the call assistant and the hearing person and the call assistant and the deaf person.

12. A method as claimed in claim 10 wherein there is a single telephone line of the telephone system used to communicate between the call assistant and the hearing person

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and the call assistant and the deaf person, the digital text message stream and the voice of the hearing person both being transmitted over that single telephone line.

13. A relay to facilitate communication between a deaf person using a telecommunication device for the deaf and a hearing person through a telephone system, the relay operated by a call assistant, the relay comprising

a earphone connected to receive voice communications from the telephone system and transmit those voice communications to the ear of the call assistant;

a microphone connected to pickup voice spoken by the call assistant;

a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream;

a modem to transit the digital text stream created by the computer over the telephone system to the telecommunication device for the deaf of the deaf person; and

a voice buffer connected between the telephone system and the earphone of the call assistant, the voice buffer being controlled by the call assistant, so that the voice assistant can buffer the voice of the hearing user between the telephone system and the ear of the call assistant.

14. A relay as claimed in claim 13 wherein there are separate telephone lines of the telephone system connected between the call assistant and the hearing person and the call assistant and the deaf person.

15. A method as claimed in claim 13 wherein there is a single telephone line of the telephone system used to communicate between the call assistant and the hearing person and the call assistant and the deaf person, the digital text message stream and the voice of the hearing person both being transmitted over that single telephone line.

\* \* \* \* \*



[Trials@uspto.gov](mailto:Trials@uspto.gov)  
571-272-7822

Paper 74  
Entered: March 3, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CAPTIONCALL, L.L.C.,  
Petitioner,

v.

ULTRATEC, INC.,  
Patent Owner.

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Case IPR2013-00544  
Patent 8,213,578 B2

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Before WILLIAM V. SAINDON, BARBARA A. BENOIT, and  
LYNNE E. PETTIGREW, *Administrative Patent Judges*.

PETTIGREW, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

I. INTRODUCTION

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed herein, Petitioner has shown by a preponderance of the evidence that claims 7–11 of U.S. Patent No. 8,213,578 B2 (Ex. 1001, “the ’578 patent”) are unpatentable.

IPR2013-00544

Patent 8,213,578 B2

*A. Procedural History*

Petitioner, CaptionCall, L.L.C., filed a Petition for *inter partes* review of claims 7–11 of the ’578 patent. Paper 1 (“Pet.”). Patent Owner, Ultratec, Inc., did not file a Preliminary Response. On March 5, 2014, pursuant to 35 U.S.C. § 314, we instituted an *inter partes* review for claims 7–11 of the ’578 patent on the following grounds of unpatentability:

Reference(s)	Basis	Challenged Claims
Ryan <sup>1</sup>	35 U.S.C. § 102(e)	7
Wycherley <sup>2</sup> and Yamamoto <sup>3</sup>	35 U.S.C. § 103(a)	7
Ryan and McLaughlin <sup>4</sup>	35 U.S.C. § 103(a)	7–11

Paper 6 (“Inst. Dec.”).

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 27, “PO Resp.”), and Petitioner filed a Reply to Patent Owner’s Response (Paper 32, “Reply”). Patent Owner also filed Motions to Exclude Evidence. Paper 41 (“PO Mot. to Exc. Occhiogrosso”); Paper 42 (“PO Mot. to Exc. Yamamoto”). Petitioner filed a combined Opposition (Paper 51, “Pet. Opp. to Mots. to Exc.”) to Patent Owner’s Motions, and Patent Owner filed a Reply to Petitioner’s Opposition (Paper 54, “PO Reply

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<sup>1</sup> U.S. Patent No. 5,809,112, issued Sept. 15, 1998 (Ex. 1004, “Ryan”).

<sup>2</sup> U.S. Patent No. 5,163,081, issued Nov. 10, 1992 (Ex. 1005, “Wycherley”).

<sup>3</sup> Yamamoto is a Japanese language document—Seichi Yamamoto and Masanobu Fujioka, *New Applications of Voice Recognition*, Proc. JASJ Conf. (March 1996) (Ex. 1006). Unless indicated otherwise, all subsequent references to Yamamoto in this decision will refer to its English language translation (Ex. 1007). Petitioner provided a revised certification attesting to the accuracy of the translation. *See* Ex. 1069; 37 C.F.R. § 42.63(b).

<sup>4</sup> U.S. Patent No. 6,181,736 B1, issued Jan. 30, 2001 (Ex. 1009, “McLaughlin”).



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to Opp. to Mots. to Exc.”). Also, Petitioner filed a Motion for Leave to File Supplemental Evidence Regarding Yamamoto (Paper 48), and Patent Owner filed an Opposition to Petitioner’s Motion (Paper 53). In response to the Board’s order (Paper 59), Petitioner filed additional briefing (Paper 61) regarding the public availability of Yamamoto. In turn, Patent Owner filed a response (Paper 63), to which Petitioner filed a Reply (Paper 64).

An oral hearing was held on November 19, 2014.<sup>5</sup>

### *B. Related Proceedings*

Petitioner represents that Patent Owner asserted the ’578 patent against Petitioner’s parent company in the following district court proceeding: *Ultratec, Inc. v. Sorenson Communications, Inc.*, No. 13-CV-00346 (W.D. Wis.). Pet. 2. Petitioner also represents that in the same district court proceeding, Patent Owner asserted the following patents at issue in related *inter partes* reviews: U.S. Patent No. 6,233,314 (Case IPR2013-00540), U.S. Patent No. 5,909,482 (Case IPR2013-00541), U.S. Patent No. 7,319,740 (Case IPR2013-00542), U.S. Patent No. 7,555,104 (Case IPR2013-00543), U.S. Patent No. 6,594,346 (Case IPR2013-00545), U.S. Patent No. 6,603,835 (Case IPR2013-00549), and U.S. Patent No. 7,003,082 (Case IPR2013-00550). Pet. 2.

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<sup>5</sup> This proceeding and IPR2013-00540, IPR2013-00541, IPR2013-00542, IPR2013-00543, IPR2013-00545, IPR2013-00549, and IPR2013-00550 involve the same parties and similar issues. The oral arguments for all eight reviews were merged and conducted at the same time. A transcript of the oral hearing is included in the record as Paper 73.

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Patent 8,213,578 B2

*C. The '578 Patent*

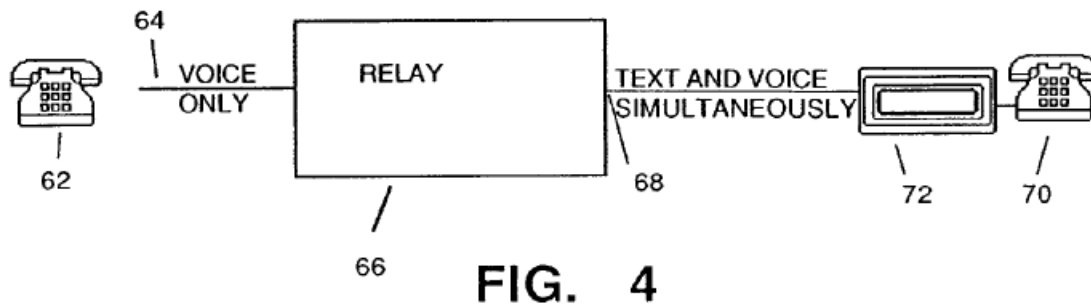
The '578 patent describes a system that assists deaf, hard of hearing, or otherwise hearing-impaired individuals in using telephones. Ex. 1001, 1:26–29. A conventional system uses a device that includes a keyboard, a display, and a specific type of modem, and is known as a telecommunication device for the deaf (TDD), a text telephone (TT), or a teletype (TTY). *Id.* at 1:37–42. When a hearing person who does not have access to a TDD wishes to communicate with a hearing-impaired person who uses a TDD, the parties may utilize a relay system, in which a human intermediary, known as a “call assistant,” communicates with the hearing user by voice and with the hearing-impaired user by using a TDD. *Id.* at 1:65–2:10. In a conventional relay system, the call assistant types, at a TDD keyboard, the words spoken by the hearing user and voices to the hearing user the words received on the TDD from the hearing-impaired user. *Id.* at 2:10–15.

The '578 patent relates to an improved method for providing a captioned telephone service using a relay. *Id.* at 2:39–56. Instead of typing the hearing user’s words, the call assistant re-voices those words into a microphone that transmits the voice of the call assistant to a computer with voice recognition software trained specifically to the voice of the call assistant. *Id.* at 6:10–16. Using the voice recognition software, the computer translates the words of the call assistant to digital text, which is sent to a display of the hearing-impaired user. *Id.* at 9:22–26.

The '578 patent also describes a captioned telephone device at the site of the assisted user. *Id.* at 6:29–7:13. Figure 4, reproduced below, illustrates the setup of a telephone call involving captioned telephone device 72:

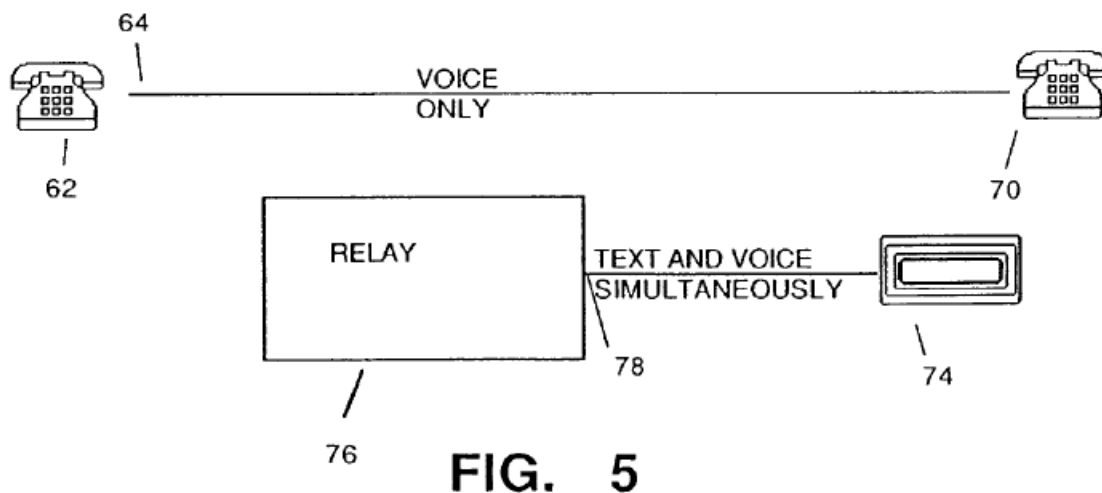
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As shown in Figure 4, a hearing user at telephone 62 communicates with relay 66 through telephone line 64. *Id.* at 6:31–32. The relay communicates both the voice of the hearing user and a transcription of the text of the conversation through telephone line 68 to an assisted user. *Id.* at 6:32–34. At the assisted user's site are captioned telephone device 72, which includes a display for text, and conventional telephone 70. *Id.* at 6:34–38. The functions of captioned telephone device 72 and telephone 70 may be combined into a single device. *Id.* at 6:46–53.

Figure 5, reproduced below, illustrates an alternative, two-line embodiment described in the '578 patent:



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As shown in Figure 5, this embodiment utilizes voice-only telephone line 64 between telephone 62 of the hearing user and telephone 70 at the assisted user's location, and a separate connection—telephone line 78—carrying text and voice between relay 76 and captioned telephone device 74 at the assisted user's location. *Id.* at 6:54–63. The voice of the hearing user is received at telephone 70 and transferred to telephone line 78 for transmission to relay 76, which converts the spoken words to a text stream to be returned to the assisted user via telephone line 78. *Id.* at 6:63–67, 7:26–30.

#### *D. Illustrative Claim*

Of the challenged claims, claim 7 is the only independent claim. Claims 8 and 11 depend from claim 7, and claims 9 and 10 depend from claim 8. Claim 7 is illustrative:

7. A method of operating a captioned telephone service, the method comprising the steps of:

providing words spoken by a remote user to a relay;

at the relay, a call assistant listening to the words spoken by the remote user and re-voicing the words into a computer with voice recognition software trained to the voice of the call assistant to create a text stream of the words spoken by the remote user; and

presenting the text stream to an assisted user via a display.

*Id.* at 10:15–23.

## II. ANALYSIS

### *A. Claim Construction*

In an *inter partes* review, we construe claim terms in an unexpired patent according to their broadest reasonable construction in light of the

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specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, No. 2014-1301, slip op. at 11–19 (Fed. Cir. Feb. 4, 2015). Consistent with the broadest reasonable construction, claim terms are presumed to have their ordinary and customary meaning, as understood by a person of ordinary skill in the art, in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An inventor may provide a meaning for a term that is different from its ordinary meaning by defining the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

We construe the claim language below in accordance with these principles. No other terms require express construction.

*1. “captioned telephone device”*

Claim 8, which depends from independent claim 7, and from which claims 9 and 10 depend, recites “receiving the words spoken at a *captioned telephone device* and transmitting the words spoken from the captioned telephone device to the relay.” Ex. 1001, 10:26–28 (emphasis added). The ordinary meaning of “telephone” is “[a]n instrument that converts voice and other sound signals into a form that can be transmitted to remote locations and that receives and reconverts waves into sound signals.”<sup>6</sup> In the context

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<sup>6</sup> THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 1846 (3d ed. 1992); THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 1779 (4th ed. 2006).

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of voice communication, a “caption” is text that communicates dialogue.<sup>7</sup> Thus, according to its ordinary meaning, a captioned telephone device is a device that transmits and receives voice signals and displays text.

The ’578 patent uses the term “captioned telephone device” consistent with this ordinary meaning. Claim 8 recites receiving spoken words at the captioned telephone device. The written description of the ’578 patent describes a captioned telephone device as a device that receives both voice signals and text information and displays the text information to an assisted user. *Id.* at 6:36–42 (“The captioned telephone device 72 is constructed to accomplish two objectives. One objective is to filter, or separate, the digital signals carrying the text information from the voice signal. The other objective is to take the digital signals and create a visual display of the text information for the assisted user.”); *see also id.* at Fig. 4 (showing a simultaneous text and voice connection between captioned telephone device 72 and relay 66). Note that a captioned telephone device need not output any audio signals to the assisted user. *See id.* at 6:46–48 (stating that a captioned telephone device may be a stand-alone device separate from a telephone at an assisted user’s location); *id.* at Figs. 4, 5 (illustrating captioned telephone device and telephone as two separate devices).

In light of the use of “captioned telephone device” in the ’578 patent and the ordinary meaning of the term, we construe “captioned telephone

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<sup>7</sup> THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 286 (3d ed. 1992) (defining “caption” in relevant part as “2. A subtitle in a motion picture.”); THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 278 (4th ed. 2006) (defining “caption” in relevant part as “2. A series of words . . . that communicate dialogue to the hearing-impaired or translate foreign dialogues.”).

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device” as a device that transmits and receives voice signals, receives text information, and displays text to an assisted user.

2. “*A method of operating a captioned telephone service*”

The preamble of independent claim 7 recites “[a] method of operating a captioned telephone service.” *Id.* at 10:15. Petitioner argues that the preamble language should not be treated as a limitation that provides both the remote user’s voice and text to the assisted user’s station. Pet. 13–14; Reply 2. Patent Owner contends that “operating a captioned telephone service” is limiting, requiring transmission of both voice and text to the assisted user. PO Resp. 10–12. If claim 7 does not require providing the remote user’s voice to the assisted user’s station, the parties agree that claim 7 is entitled to the benefit of the filing date of U.S. Patent No. 5,909,482 (“the ’482 patent”), i.e., September 8, 1997.<sup>8</sup> Pet. 13; PO Resp. 35.

“In general, a preamble limits the invention if it recites essential structure or steps, or if it is ‘necessary to give life, meaning, and vitality’ to the claim.” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). A preamble, however, “generally is not limiting when the claim body describes a structurally complete invention such that deletion of the preamble phrase does not affect the structure or steps of the claimed invention.” *Id.* at 809. One guidepost for determining the effect of a preamble on claim scope is whether the preamble language provides antecedent basis for any limitation in the body of the claim. *Id.* at 808.

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<sup>8</sup> The prior art status of certain references asserted against claim 7 depends on the effective filing date and on whether the claim requires providing the remote user’s voice to the assisted user’s station.

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Moreover, a preamble describing the purpose or intended use of an invention generally does not limit the claim. *Id.* at 809.

As described in the '578 patent, providing captioned telephone service involves receiving the voice of the hearing user at a relay and transmitting a text stream and the voice of the hearing user over a telephone connection to the assisted user. Ex. 1001, 8:53–57. Patent Owner contends that given the emphasis in the '578 patent on providing both voice and text in a captioned telephone service, we should construe claim 7 to require transmitting both voice and text to the assisted user. PO Resp. 12. The phrase “operating a captioned telephone service,” however, appears only in the preamble of claim 7, and does not provide antecedent basis for any limitation in the body of the claim. As Petitioner notes, the phrase “captioned telephone service” is not recited again in the claim, *see* Pet. 13, nor is it recited in any of the claims that depend from claim 7.

The steps recited in the body of claim 7—providing words spoken by the remote user to a relay, a call assistant re-voicing the words to create a text stream, and presenting a text stream of the spoken words to the assisted user—define a complete method and do not rely on a recitation of a “captioned telephone service” in the preamble. Thus, “operating a captioned telephone service” is not an essential step that is necessary to give meaning to the claim and only states a purpose or intended use of the claimed method steps. Although claim 7 recites some steps associated with providing a captioned telephone service, notably missing from claim 7 is a limitation that requires providing the voice of the remote user to the assisted user. Because claim 7 does not recite that limitation explicitly, and because the phrase “operating a captioned telephone service” in the preamble is not an



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essential step of the claim, we do not construe the claim to include the additional limitation of providing the voice of the remote user to the assisted user.

Reading the claim as a whole and applying the broadest reasonable construction of the claim language, we conclude that the “operating a captioned telephone service” language in the preamble of claim 7 is not a limitation requiring a remote user’s voice to be transmitted to, or received by, the assisted user. Accordingly, claim 7 has an effective filing date of September 8, 1997.

3. *“trained to the voice of the call assistant”*

Neither party expressly proposes a construction for “trained to the voice of the call assistant,” which appears in independent claim 7. *See* Pet. 16–17; PO Resp. 6–12; Reply 1–2. In their dispute over the teachings of the asserted prior art, however, the parties articulate different views as to how the term should be construed. Patent Owner construes “trained to the voice of the call assistant” to require training to recognize individual voices, PO Resp. 24, presumably trained to the voice of one, and only one, call assistant and to preclude training for a type of speech used by a group of people (such as a regional accent) that could apply to more than one call assistant. Patent Owner also seeks to construe “trained to the voice of the call assistant” as having a temporal constraint so as to preclude training at the time when the voice recognition computer software package is “designed in advance of implementation at the source code level.” *Id.* (emphasis omitted). According to Patent Owner, “trained to the voice of the call assistant” precludes software that is “built” to recognize the voice of a particular agent. *Id.* at 25. Petitioner disagrees. Reply 4–5.

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The '578 patent does not set forth a special definition for “training.” In the “Brief Summary of the Invention,” however, the '578 patent refers to “a speech recognition computer program which has been trained to the voice *pattern* of the call assistant.” Ex. 1001, 2:44–46 (emphasis added). The '578 patent incorporates by reference the disclosure of the '482 patent regarding the use of voice recognition software in a re-voicing relay. *Id.* at 3:51–53. In that context, the '482 patent describes “the call assistant operat[ing] at a computer terminal which contains a copy of a voice recognition software package which is specifically trained to the voice of that *particular* call assistant.” Ex. 1002, 5:44–47 (emphasis added). Thus, the '578 patent contemplates software trained to “a voice *pattern* of the call assistant” as well as software “specifically trained to the voice of [a] *particular* call assistant.” Neither description of training, however, indicates when or how the training occurs. Patent Owner, relying on its declarant Mr. Paul W. Ludwick, asserts that a person of ordinary skill in the art would not have understood software that is “designed” in advance to recognize the voice of particular agents to be software that is “trained to recognize individual voices,” because such technology was not used in telecommunications relay service in 1994. PO Resp. 24 (citing Ex. 2010 ¶¶ 21–22). We note that technology available in 1994 has little probative value here because the earliest date of invention for claims of the '578 patent is 1997.

We give claim language its broadest reasonable construction in light of the specification of the patent in which it appears. Thus, we will not limit “trained to the voice of the call assistant” to require training to the voice of one particular call assistant, because the claim language encompasses the

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invention as disclosed in the written description of the '578 patent—software trained to a voice *pattern* of a call assistant. Ex. 1001, 2:39–47 (“Summary of the Invention”). Nor will we limit “trained to the voice of the call assistant” to a particular time at which training must occur or to a particular manner of training that is not found in the claims or the written description of the '578 patent.

*B. Principles of Law*

To prevail in challenging Patent Owner’s claims, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

A claim is anticipated if a single prior art reference either expressly or inherently discloses every limitation of the claim. *Orion IP, LLC v. Hyundai Motor Am.*, 605 F.3d 967, 975 (Fed. Cir. 2010). To anticipate, a reference also “must enable one of ordinary skill in the art to make the invention without undue experimentation.” *Impax Labs., Inc. v. Aventis Pharm., Inc.*, 545 F.3d 1312, 1314 (Fed. Cir. 2008). To determine whether “undue experimentation” is required, various factors are examined, including (1) the quantity of experimentation; (2) the amount of direction or guidance present; (3) the presence or absence of working examples; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of those in the art; (7) the predictability or unpredictability of the art; and (8) the breadth of the claims. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988); *see also Impax Labs.*, 545 F.3d at 1314–15 (indicating the Wands factors should be applied to a determination whether a prior art reference is enabled).

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A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time of the invention to a person having ordinary skill in the art. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). The level of ordinary skill in the art is reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995).

*C. Patent Owner's Motion to Exclude Testimony by Mr. Occhiogrosso*

Patent Owner seeks to exclude the testimony of Mr. Benedict Occhiogrosso (Exs. 1030, 1057, 2006, 2007, and 2016) on the theory that he is not qualified as an expert under Federal Rule of Evidence 702 (“FRE 702”).<sup>9,10</sup> PO Mot. to Exc. Occhiogrosso; PO Resp. 2–5. FRE 702 provides that a witness qualified as an expert by knowledge, skill,

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<sup>9</sup> Patent Owner also seeks to *exclude* Mr. Occhiogrosso's testimony under 37 C.F.R. § 42.65. PO Mot. to Exc. Occhiogrosso 1. Rule 42.65, however, addresses (a) the weight given to expert testimony that does not disclose underlying facts or data on which the opinion is based, (b) the showing required if a party seeks to rely on a technical test or data from such a test, and (c) the exclusion of expert testimony on United States patent law or patent examination practice. As such, Rule 42.65 does not apply to a determination whether to exclude Mr. Occhiogrosso's testimony.

<sup>10</sup> With some enumerated exceptions, the Federal Rules of Evidence apply to an *inter partes* review. 37 C.F.R. § 42.62.

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experience, training, or education may testify in the form of an opinion if (a) the expert's knowledge will help the trier of fact to understand the evidence or to determine a fact in issue, (b) the testimony is based upon sufficient facts or data, (c) the testimony is the product of reliable principles and methods, and (d) the witness has applied the principles and methods reliably to the facts of the case. Testimony on the issue of unpatentability proffered by a witness who is not "qualified in the pertinent art" generally is not admissible under FRE 702. *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1363–64 (Fed. Cir. 2008). In determining who is qualified in the pertinent art under FRE 702, we need not find a complete overlap between the witness's technical qualifications and the problem confronting the inventor or the field of endeavor. *See SEB S.A. v. Montgomery Ward & Co., Inc.*, 594 F.3d 1360, 1372–73 (Fed. Cir. 2010) (upholding admission of the testimony of an expert who admittedly lacked expertise in the design of the patented invention, but had experience with materials selected for use in the invention); *Mytee Prods., Inc. v. Harris Research, Inc.*, 439 Fed. App'x 882, 886–87 (Fed. Cir. 2011) (non-precedential) (upholding admission of the testimony of an expert who "had experience relevant to the field of the invention," despite admission that he was not a person of ordinary skill in the art).

Patent Owner contends that, to qualify as an expert under FRE 702, Mr. Occhiogrosso must be a person of ordinary skill in the art, and that Mr. Occhiogrosso is not a person of ordinary skill in the art because he does not have "general knowledge and understanding of the telecommunications needs of the deaf and HOH [(hard of hearing)]" or "experience with the development of assistive telecommunications technology for such

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individuals.” PO Mot. to Exc. Occhiogrosso 1–4; *see also id.* at 5–7 (discussing Mr. Occhiogrosso’s experience with respect to these areas). Petitioner responds that Patent Owner’s definition of the level of ordinary skill in the art conflates a requirement for skill in the relevant technical art (“telecommunications systems [having] voice-to-text transcription”) with skill in one particular commercial sector that applies that technical art (“telecommunications services *specifically* designed for the deaf or hard of hearing”). Pet. Opp. to Mots. to Exc. 1, 3–4.

Patent Owner’s arguments are unpersuasive at the outset because, to testify as an expert under FRE 702, a person need not be a person of ordinary skill in the art, but rather “qualified in the pertinent art.” *Sundance*, 550 F.3d at 1363–64; *see SEB*, 594 F.3d at 1372–73; *Mytee*, 439 Fed. App’x at 886–87. Patent Owner’s arguments are also unpersuasive because they attempt to constrict the “pertinent art,” i.e., the pertinent technology, to a particular subset of individuals who use the pertinent technology, rather than the pertinent technology itself. *See* Pet. Opp. to Mots. to Exc. 4–5 (arguing that the problems in the pertinent art are not “uniquely related” to the deaf and hard-of-hearing). Moreover, Patent Owner indicates elsewhere that the relevant field of art is telecommunication technologies. *See* PO Resp. 18 n.1 (Patent Owner indicating its declarant “Mr. Ludwick indisputably is [a person of ordinary skill in the art] in telecommunications technologies, which is the relevant field of art,” to opine on speech recognition software for use in telecommunication relay service settings). Petitioner similarly indicates the relevant field is telecommunication technologies. Pet. Opp. to Mots. to Exc. 6 (“Mr. Occhiogrosso’s qualifications should be analyzed with

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respect to the pertinent art of telecommunication technologies in which an intermediary facilitates voice-to-text transcription.”).

We agree that the pertinent art is telecommunication technologies. The ’578 patent states that the “present invention relates to the general field of telephone communications.” Ex. 1001, 1:25–26. The ’578 patent focuses on a particular application of that technology: people who need assistance in using telecommunications devices. *Id.* at 1:25–2:34 (describing various prior art assistive technologies to help characterize the evolution of assistive technologies). The ’578 patent also summarizes the invention as the use of a speech recognition computer program trained to the voice of the call assistant to translate promptly the words spoken by an intermediary call assistant into a “high speed digital communication message [that] is then transmitted electronically promptly by telephone to a visual display accessible to the” hearing-assisted user. *Id.* at 2:47–50.

The qualifications of Mr. Occhiogrosso, as summarized in his curriculum vitae (Ex. 1019), qualify him to give expert testimony on the subject of telecommunication technologies. He possesses a Bachelor of Science in Electrical Engineering and a Master of Science in Electrical Engineering. Ex. 1019, 2. Mr. Occhiogrosso testifies that he has more than thirty years of experience in the field of telecommunications and information technology, and he has planned, designed, implemented, and managed large scale projects involving wired and wireless communication systems, including transmission of voice and data. Ex. 1030 ¶ 7; *see also* Ex. 1019, 2–6 (detailing Mr. Occhiogrosso’s enterprise consulting engagements, research and development, and wireless experience).

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Moreover, to the extent Mr. Occhiogrosso is more familiar with general telecommunications technology and less familiar with voice-to-text or its application to the deaf or hearing-impaired, or to the extent that Mr. Occhiogrosso's testimony is inconsistent or unsupported, we weigh Mr. Occhiogrosso's testimony accordingly, taking into account the extent of his expertise in these areas. *See, e.g., Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) (holding the Board has discretion to give more weight to one item of evidence over another "unless no reasonable trier of fact could have done so"); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) ("[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.").

Patent Owner also contends that Mr. Occhiogrosso's testimony fails to identify the level of skill in the art in his declaration (Ex. 1030), fails to give any consideration to what one of ordinary skill in the art would have known or not known, is unsupported and unreliable, and does not consider secondary considerations. PO Mot. to Exc. Occhiogrosso 8; PO Resp. 4–5; PO Reply to Opp. to Mots. to Exc. 3. Petitioner counters that Mr. Occhiogrosso "consistently applied his definition of a [person of ordinary skill in the art] throughout his testimony" and, in a supplemental declaration, "made explicit the level of ordinary skill he applied" in his first declaration. Pet. Opp. to Mots. to Exc. 11–12.

Patent Owner's argument goes more to the weight we should accord Mr. Occhiogrosso's testimony, rather than its admissibility. It is within our discretion to assign the appropriate weight to the testimony offered by Mr. Occhiogrosso. *See, e.g., Yorkey*, 601 F.3d at 1284. Moreover,



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Mr. Occhiogrosso provided a supplemental declaration identifying the level of skill in the art and confirming his opinion presented in the earlier declaration in view of the level of skill in the art. *See* Ex. 1057 ¶¶ 12–17, 19. Mr. Occhiogrosso’s testimony also confirmed his legal understanding of anticipation and obviousness, including secondary considerations. *See id.* ¶¶ 20–26.

Under the totality of these circumstances, we decline to exclude the testimony of Mr. Occhiogrosso. Accordingly, Patent Owner’s Motion to Exclude Mr. Occhiogrosso’s testimony (Paper 41) is *denied*.

#### *D. Asserted Ground of Anticipation by Ryan*

Petitioner asserts that claim 7 of the ’578 patent is anticipated by Ryan. Pet. 31–32. Patent Owner challenges Petitioner’s assertion. PO Resp. 15–35.

##### *1. Summary of Ryan*

Ryan describes a relay interface system for communication between a standard telephone set used by a hearing user and a TDD used by a hearing-impaired person. Ex. 1004, Abstract, 1:6–10. Figure 1 of Ryan is set forth below:

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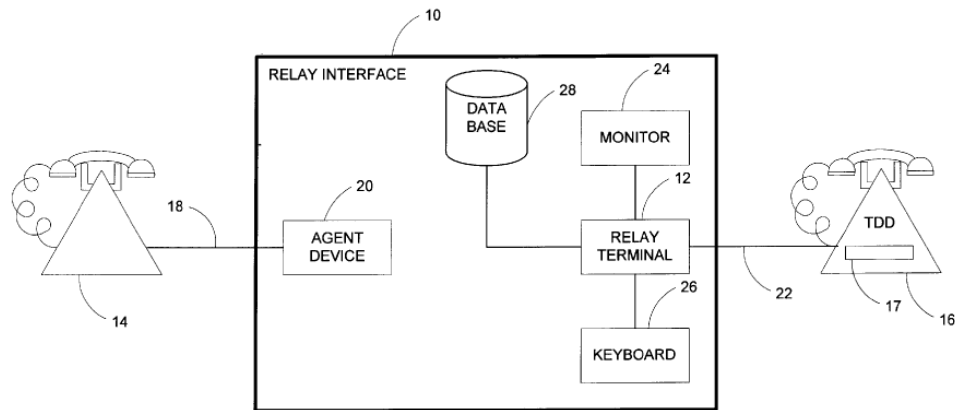


FIG. 1

As shown in Figure 1, Ryan's relay interface 10 includes operator/relay terminal 12 and connects standard telephone set 14 with TDD 16 having associated display 17. *Id.* at 3:43–48. Telecommunications link 18 connects telephone 14 with relay interface 10 through agent device 20, and telecommunications link 22 connects TDD 16 with relay interface 10 through relay terminal 12. *Id.* at 3:48–52. An operator or relay agent typically is responsible for manipulating relay terminal 12 using keyboard 26 to relay messages between telephone 14 and TDD 16. *Id.* at 4:19–21. Ryan indicates, however, that speech recognition software could be used to automate the relay function so that an operator or relay agent would not be required. *Id.* at 4:21–24. Ryan specifically describes using speech recognition software at agent device 20 to interpret a voice message from a caller at telephone 14 and convert the message from a voice format to a data format. *Id.* at 4:24–27. Ryan further indicates:

If the software is specifically designed to recognize the voice of particular relay agents, the accuracy of the relay service may be improved by having one of these agents listen to the caller and

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repeat the voice message into a terminal adapted to convert the agent's voice message into a data message.

*Id.* at 4:33–38.

## 2. *Ryan is Prior Art*

Ryan issued on September 15, 1998, with a filing date of July 3, 1996, and is entitled to the benefit of the filing date of its parent application, October 18, 1994. Ex. 1004. As explained above, under our claim construction, the effective filing date of claim 7 is September 8, 1997, the filing date of the related '482 patent. *See supra* II.A.2. Thus, Petitioner asserts Ryan is prior art to claim 7 under 35 U.S.C. § 102(e). *See* Reply 2. Patent Owner contends that Ryan is not prior art under § 102(e) because it is not enabled. PO Resp. 15–23.

Under § 102(e), Ryan must be enabled prior to the date of invention of claim 7 of the '578 patent. *See* 35 U.S.C. § 102 (“A person shall be entitled to a patent unless— . . . (e) the invention was described in . . . (2) a patent granted on an application for patent . . . filed in the United States before the invention by the applicant for patent.”). The earliest possible date of invention of claim 7 is presumed to be September 8, 1997.

As an initial matter, we address Patent Owner's assertion of an earlier date of invention for claim 7—June 23, 1997. *See* PO Resp. 22–23. Patent Owner relies on a journal entry from August 5, 1997 indicating “the [call assistant] repeats what voice person says” and two declarations regarding the purchase of commercial software (i.e., IBM ViaVoice). Ex. 2011 ¶¶ 3–4; Ex. 2012 ¶¶ 7–10; Ex. 2013 ¶¶ 7–10. The declarations indicate that IBM ViaVoice was released in August 1997, and the application for the '482 patent was filed shortly thereafter on September 8, 1997. Ex. 2012 ¶¶ 7–10;

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Ex. 2013 ¶¶ 7–10. Patent Owner’s earliest proffered evidence dates back only to August 5, 1997, not to June 23, 1997. Moreover, Patent Owner has not attempted to show diligence in reduction to practice.<sup>11</sup> Thus, we do not find that Patent Owner has established a date of invention for claim 7 prior to September 8, 1997.

We now turn to whether the portion of Ryan relied on by Petitioner as disclosing “a computer with voice recognition software trained to the voice of the call assistant to create a text stream of the words spoken by the remote user” was enabled at the relevant time. Initially, there is a presumption that a prior art reference is enabled. *See In re Antor Media*, 689 F.3d 1282, 1287–1288 (Fed. Cir. 2012); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1355 (Fed. Cir. 2003). The parties agree that commercial voice recognition software available from Dragon Systems, called “Naturally Speaking” (and sometimes referred to as “Dragon Naturally Speaking”), enabled the use of voice recognition software by a call assistant to re-voice a remote user’s words to create a text stream. PO Resp. 22 (citing Exs. 2011, 2012, 2013); Reply 4. There is no dispute that Dragon Naturally Speaking was available to the public on June 23, 1997. PO Resp. 22 (citing Exs. 2011, 2012, 2013); Reply 3. Moreover, the ’482 patent, filed on September 8, 1997, and incorporated by reference into the ’578 patent, *see* Ex. 1001, 3:51–53, acknowledged Dragon Naturally Speaking was available commercially. Ex. 1002, 5:51–57 (stating that “a

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<sup>11</sup> *See Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1577 (Fed. Cir. 1996) (holding that the first to conceive “may date his patentable invention back to the time of its conception, if he connects the conception with its reduction to practice by reasonable diligence on his part, so that they are substantially one continuous act” (internal citation and quotations omitted)).

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recently available commercial voice recognition package from Dragon Systems, known as ‘Naturally Speaking,’ is a voice recognition software that will . . . translate to digital text spoken words of a user at the normal speeds of human communication in conversation when operating on conventional modern personal computers”). Weighing the *Wands* factors, we determine that at least the state of the prior art (including commercial availability of Dragon Naturally Speaking), the breadth of the claim language (“a computer with voice recognition computer software trained to the voice of the call assistant to create a text stream of the words spoken by the remote user”), and the predictability of the telecommunications art support a conclusion that Ryan is enabled as of June 23, 1997. *See Wands*, 858 F.2d at 737.

Patent Owner argues that Ryan does not anticipate claim 7 under § 102(e) because Ryan’s disclosure of speech recognition software (Ex. 1004, 4:19–38) was not enabled in 1994, the earliest effective filing date claimed by Ryan. PO Resp. 15–21. We do not agree with Patent Owner that to anticipate under § 102(e), a reference must be enabled as of its earliest claimed priority date. First, “[e]nablement of an anticipatory reference may be demonstrated by a later reference.” *Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1379 (Fed. Cir. 2001). An anticipatory reference under § 102(b) is enabled if it can be shown that the claimed subject matter was in possession of the public before the critical date of the challenged patent. *Id.* Based on well-established law that to anticipate under § 102(b) a reference must be enabled by the critical date, rather than the publication date of the reference asserted as prior art, we conclude that to anticipate under § 102(e), a reference must be enabled by the date of invention of the challenged claim. As determined previously,

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Ryan is enabled by commercial voice recognition software available to the public on June 23, 1997, which precedes the earliest possible date of invention for claim 7 of the '578 patent. Thus, Ryan is prior art to claim 7. *See* 35 U.S.C. 102(e) (precluding patentability if the invention of the patent was described in “a patent granted on an application for patent . . . filed in the United States before the invention”).

Second, we are not persuaded by Patent Owner’s arguments citing cases concerning (i) the written description requirement of 35 U.S.C. § 112, *In re Wertheim*, 646 F.2d 527 (CCPA 1981), and (ii) the problem of “secret prior art,” *Alexander Milburn Co. v. Davis-Bournonville Co.*, 270 U.S. 390 (1926). Patent law now recognizes “secret prior art” in section 102(e), and the Federal Circuit has observed that “[e]ven the ‘secret prior art’ of § 102(e) is ultimately public in the form of an issued patent before it attains prior art status.” *OddzOn Products, Inc. v. Just Toys, Inc.*, 122 F.3d 1396, 1402 (Fed. Cir. 1997). Further, it is well-settled that the enablement requirement is a separate requirement from the written description requirement. *See, e.g., Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). Moreover, “[t]he enablement requirement is often more indulgent than the written description requirement. The specification need not explicitly teach those in the art to make and use the invention; the requirement is satisfied if, given what they already know, the specification teaches those in the art enough that they can make and use the invention without ‘undue experimentation.’” *Amgen*, 314 F.3d at 1334.

Finally, we are not persuaded by Mr. Ludwick’s testimony addressing the inability of technology in 1994 to implement continuous speech recognition technology. PO Resp. 18 (citing Ex. 2010 ¶¶ 23–30). For the

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reasons discussed, Ryan need not be enabled as of 1994 to qualify as prior art to claim 7 of the '578 patent. We have determined that Ryan was enabled as of June 1997 and, therefore, qualifies as prior art to claim 7.

### 3. *Claim 7*

To support its contention that Ryan anticipates claim 7, Petitioner provides analysis as to how Ryan discloses each claim limitation and relies on declaration testimony of Mr. Occhiogrosso. Pet. 31–32; Reply 4–6 (citing Ex. 1057). Patent Owner responds, relying on declaration testimony by Mr. Ludwick. PO Resp. 23–35 (citing Ex. 2010). Having considered the parties' contentions and supporting evidence, we find that Petitioner has demonstrated by a preponderance of the evidence that Ryan anticipates claim 7.

Ryan discloses the first and last steps of claim 7, “providing words spoken by a remote user to a relay,” and “presenting the text stream to an assisted user via a display.” Ex. 1004, 1:53–59, 2:52–54. Ryan also discloses a call assistant at the relay listening to the words spoken by the remote user. *Id.* at 4:34–36. The dispute between the parties is whether Ryan discloses the remaining limitation—“at the relay, a call assistant . . . re-voicing the words into a computer with voice recognition software trained to the voice of the call assistant to create a text stream of the words spoken by the remote user.”

Petitioner contends this limitation is disclosed by Ryan's relay interface system in which a relay agent is responsible for relaying messages between phone 14 and TDD 16. Pet. 32 (citing Ex. 1004, 4:19–38). Specifically, Petitioner relies on Ryan's description of “speech recognition software . . . employed at [relay agent] device 20 [and] specifically designed

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to recognize the voice of particular relay agents” and Ryan’s indication that “the accuracy of the relay service may be improved by having one of these agents listen to the caller and repeat the voice message into a terminal adapted to convert the agent's voice message into a data message.” Pet. 32 (citing Ex. 1004, 4:24–38).

Patent Owner responds with several arguments, none of which we find persuasive. *See* PO Resp. 23–35. Undergirding some of these arguments is Patent Owner’s focus on the state of the art of voice recognition technology in 1994. *See id.* at 24 (“[S]peech recognition was not actually used at all in the [telecommunications relay service] field in 1994.”); *id.* at 34–35 (asserting that Ryan must be read narrowly in view of the state of the telecommunications relay art in 1994); Ex. 1020 ¶¶ 24–30 (Mr. Ludwick submitting that Ryan does not contain an enabling disclosure based on technology available in 1994). The state of the art of the relevant technology in 1994, however, has limited probative value. Of greater significance is the state of the art of the relevant technology in September 1997, the date of invention of the subject matter of claim 7. *See* 35 U.S.C. § 102(e). As noted previously, there is no dispute about the state of voice recognition technology as of June 23, 1997, when Dragon Naturally Speaking was released.

Patent Owner contends that Ryan does not disclose the recited “voice recognition software *trained* to the voice of the call assistant” because Ryan’s software is “designed” to recognize the voice of particular relay agents. PO Resp. 23–24. According to Patent Owner, software *designed* in advance of implementation at the source code level is not the same as *trained* software. *Id.* at 24. As discussed previously, *see supra* II.A.3, we



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do not agree with Patent Owner that trained voice recognition software, as recited in claim 7, precludes software that is trained during the design phase, which Patent Owner contends is disclosed by Ryan. *See* PO Resp. 25.

Thus, we are not persuaded by Patent Owner's argument, which is premised on an incorrect claim construction. Moreover, Patent Owner relies on Mr. Ludwick's testimony, which we do not find persuasive because it is grounded in the state of the art in 1994, rather than at the time of invention in 1997. *See id.*

Next, relying on Mr. Ludwick's testimony, Patent Owner contends that Ryan does not disclose the recited "voice recognition software trained to the voice of the call assistant," because Ryan's "voice recognition software is written specifically to recognize the voices of a collection or group of people, rather than a particular, individual call assistant." PO Resp. 26 (citing Ex. 2010 ¶ 22). For the reasons discussed previously, we do not agree that the claim language is limited to voice recognition software trained to one, and only one, call assistant. *See supra* II.A.3. Thus, even if Ryan's software is trained to recognize the voices of a group of people rather than an individual call assistant, we are not persuaded by Patent Owner's argument, which is premised on an incorrect claim construction.

Patent Owner also contends that, at most, Ryan is ambiguous as to the disclosure of a call assistant re-voicing the words spoken by the remote user into a computer to create a text stream of those words, and so does not anticipate claim 7. PO Resp. 26–34. In particular, Patent Owner contends that Ryan discloses a relay agent using re-voicing as an error correction mechanism for individual, unrecognized letters of a word. *Id.* at 29–33; *see*

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Ex. 1004, Abstract. We do not read Ryan's disclosure so narrowly. *See* Ex. 1004, 4:19–38.

Ryan's technology is intended to “overcome[] the problem associated with existing telecommunications relay services by providing a system and method for correcting mistakes before the message is displayed at the end user's TDD.” *Id.* at 2:35–38 (Summary of the Invention). Ryan describes ways to do so using speech recognition software. *Id.* at 4:19–38. One way is automating the relay function so as to eliminate the need for a human operator. *Id.* at 4:19–24. Ryan describes using speech recognition software to convert the voice message from a caller to text “while providing an error correction feature for words not recognized by the software.” *Id.* at 4:24–28. Ryan further describes the error correction feature as having two forms—phonetic spelling of the unrecognized word by the speech recognition software or prompting the caller to spell the unrecognized word. *Id.* at 4:29–33.

Ryan describes another way to improve the accuracy of a relay system before the text is displayed at the TDD—if the speech recognition software is designed specifically to recognize the voice of particular relay agents, a relay agent “listen[s] to the caller and repeat[s] the voice message into a terminal adapted to convert the agent's voice message into a data message.” *Id.* at 4:33–38. In contrast to Ryan's description of the error correction by the *caller* spelling letters of an unrecognized word, here Ryan unambiguously describes a call agent repeating the voice message of the caller and using speech recognition software designed specifically to recognize the voice of the relay agent to convert the agent's voice message into a data message.

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Finally, Patent Owner contends that Ryan does not disclose “voice recognition software trained to the voice of the call assistant” running on the call assistant’s workstation, rather than running remotely or virtually from a server or other computer. PO Resp. 34. Ryan indicates “speech recognition software could be employed at device 20,” which is included in Ryan’s telecommunications relay interface system 10 used by the relay agent. Ex. 1004, 3:43–45; *see also id.* at Fig. 1 (showing agent device 20 within telecommunications relay interface system 10). Ryan goes on to state “[i]f the software is specifically designed to recognize the voice of particular relay agents, the accuracy of the relay service may be improved by having one of these agents listen to the caller and repeat the voice message into a terminal adapted to convert the agent’s voice message into a data message.” *Id.* at 4:33–38. We do not agree with Patent Owner’s assertion that, because that sentence in Ryan refers to “a terminal” (rather than identifying a component shown in Figure 1), Ryan’s voice recognition software could be located somewhere other than on the agent’s workstation.

For these reasons, we find Ryan discloses “at the relay, a call assistant . . . re-voicing the words into a computer with voice recognition software trained to the voice of the call assistant to create a text stream of the words spoken by the remote user,” as recited in claim 7. Accordingly, we find that Petitioner has demonstrated by a preponderance of the evidence that Ryan anticipates claim 7.

*E. Asserted Ground of Obviousness over Wycherley and Yamamoto*

Petitioner asserts that claim 7 of the ’578 patent is unpatentable under 35 U.S.C. § 103 as obvious over Wycherley and Yamamoto. Pet. 33–37.

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Petitioner asserts that both Wycherley and Yamamoto qualify as prior art to claim 7 under 35 U.S.C. § 102(b). Pet. 18, 21. Patent Owner challenges Petitioner's contentions regarding obviousness based on Wycherley and Yamamoto, including whether Yamamoto is prior art. PO Resp. 48–59.

*1. Yamamoto is a Printed Publication under 35 U.S.C. § 102(b)*

Petitioner asserts that Yamamoto was published in March 1996 and, therefore, qualifies under 35 U.S.C. § 102(b) as prior art to claim 7 of the '578 patent. Pet. 21. Patent Owner contends that Yamamoto is not prior art because Petitioner has not provided sufficient evidence to show that Yamamoto was a publicly accessible printed publication more than one year prior to September 8, 1997, the effective filing date of claim 7.<sup>12</sup> Paper 42 (PO Mot. to Exc. Yamamoto); Paper 63.

*a. Evidence of Public Accessibility*

We begin with some procedural background to provide context for the evidence relied on by Petitioner. In April 2014, approximately one month after our institution decision, Petitioner served on Patent Owner supplemental evidence in response to Patent Owner's objections regarding the publication date of Yamamoto and, hence, its prior art status. *See* Paper 18, 4; *see also* Paper 59, 3–4 (detailing procedural history). On May 30, 2014, Patent Owner filed its Patent Owner Response, which did not challenge the sufficiency of Petitioner's evidence demonstrating the public accessibility of Yamamoto, or otherwise contend that Yamamoto is not prior art to the '578 patent under 35 U.S.C. § 102(b). Paper 27; *see* Paper 59, 4. Rather, Patent Owner waited an additional three months, until August 26,

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<sup>12</sup> *See supra* II.A.2.

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2014, in its Motion to Exclude Evidence, to challenge the sufficiency of Petitioner's evidence regarding the public accessibility of Yamamoto.

Paper 42; *see* Paper 59, 4.

Petitioner then moved to submit supplemental information under 37 C.F.R. § 123(b), including a transcript of a videotaped interview with Mr. Seiichi Yamamoto, the first named author of the Yamamoto reference. Paper 48; Ex. 2017 (Videoconference Deposition of Seiichi Yamamoto, Aug. 20, 2014) ("Yamamoto transcript"). We granted the motion, and permitted the parties to file supplemental briefing regarding the public accessibility of Yamamoto, including the admissibility of the Yamamoto transcript. *See* Paper 59, 10–11; Paper 61 (Petitioner's Additional Briefing); Paper 63 (Patent Owner's Response to Additional Briefing); Paper 64 (Petitioner's Reply to Patent Owner's Response to Additional Briefing).

We now consider the evidence regarding the public accessibility of Yamamoto. The first page of Yamamoto indicates it was a paper presented at the Proceedings of the Acoustical Society of Japan Spring 1996 Research Presentation Conference in March 1996. Ex. 1007. In support of its contention that Yamamoto was publicly accessible in March 1996, Petitioner relies primarily on the transcript of the interview with Mr. Yamamoto, in which the parties questioned Mr. Yamamoto regarding the presentation and distribution of the paper at the conference. *See* Ex. 2017. This interview was conducted in connection with the related district court proceeding, *Ultratec, Inc. v. Sorenson Communications, Inc.*, No. 13-CV-00346 (W.D. Wis.). *See* Ex. 2017, 1.

Pursuant to stipulation of the parties, both parties had the opportunity to ask Mr. Yamamoto questions at the interview, an interpreter was present

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to translate Mr. Yamamoto's testimony, and a court reporter made a stenographic record of the English portion of the interview. *See* Ex. 1067 (Stipulation Regarding Seiichi Yamamoto) ¶¶ 1, 3. The parties also stipulated that the stenographic record of the interview would be treated as sworn deposition testimony in the district court proceeding and, "[w]ith respect to other proceedings, the stenographic record will be treated as a sworn deposition taken in Western District of Wisconsin Case Nos. 13-cv-346 and 14-cv-66 at which both parties appeared and had the opportunity to question the witness." *Id.* ¶ 5.

Patent Owner contends the Yamamoto transcript should be excluded as evidence because the parties did not agree it could be used in this proceeding. Paper 63, 5–6. To the contrary, the parties' stipulation provides that "[t]he use and admissibility of the stenographic record in any other proceedings will be governed by the rules in effect with respect to such other proceeding." Ex. 1067 ¶ 5. Thus, the parties agreed that the Yamamoto transcript may be used in this *inter partes* review to the extent permitted by our rules.

Patent Owner argues that Board rules require exclusion of the Yamamoto transcript because Mr. Yamamoto was not sworn and did not sign the transcript, and because Petitioner failed to provide advance notice to the Board of its intent to take a foreign language deposition. Paper 63, 6 (citing 37 C.F.R. § 42.53(a), (e), (f)). The Yamamoto transcript, however, does not run afoul of the rules cited by Patent Owner because Petitioner seeks to admit the transcript as a deposition taken in the district court proceeding, not as deposition testimony taken in this *inter partes* review proceeding. *See* Paper 64, 1. Moreover, the parties stipulated that the

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Yamamoto transcript would be treated as sworn deposition testimony taken in the district court. Ex. 1067 ¶ 5.

Patent Owner further contends that the Yamamoto transcript constitutes inadmissible hearsay under the Federal Rules of Evidence, which apply to this proceeding. Paper 63, 7 (citing 37 C.F.R. § 42.62(a); Fed. R. Evid. 801, 802). Petitioner responds that the Yamamoto transcript is admissible as an exception to the rule against hearsay. Paper 64, 1–3. We agree with Petitioner.

First, Rule 804(b)(1) allows the use of former testimony of an unavailable witness if the testimony “(A) was given as a witness at a trial, hearing, or lawful deposition, whether given during the current proceeding or a different one; and (B) is now offered against a party who had . . . an opportunity and similar motive to develop it by direct, cross-, or redirect examination.” Fed. R. Evid. 804(b)(1). By stipulation of the parties, the interview of Mr. Yamamoto was treated as a lawful deposition in the district court proceeding. Ex. 1067 ¶ 5. Also, both parties had the opportunity to develop Mr. Yamamoto’s testimony and had the same motive as in this proceeding—to determine whether Yamamoto was publicly accessible. *See* Ex. 1067 ¶ 1; Ex. 2017. As we previously determined, Petitioner reasonably concluded, based on Patent Owner’s Response (Paper 27) filed on May 30, 2014, that Patent Owner no longer was challenging the prior art status of the Yamamoto reference. Paper 59, 7. Petitioner only became aware of Patent Owner’s continued challenge when Patent Owner improperly challenged the sufficiency of the Yamamoto reference in its Motion to Exclude filed on August 26, 2014, well after the time for taking testimony in this proceeding. *Id.* At that point, Petitioner had no reasonable means for obtaining

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Mr. Yamamoto's testimony for this proceeding. *See* Paper 48, 3 (Petitioner's Motion for Leave to File Supplemental Evidence Regarding Yamamoto). We determine, therefore, that Mr. Yamamoto was unavailable as a witness, *see* Fed. R. Evid. 804(a), and the Yamamoto transcript is admissible under Rule 804(b)(1).<sup>13</sup>

In addition, the Yamamoto transcript is admissible under Rule 807. First, Mr. Yamamoto's videotaped interview, which was stipulated to be sworn deposition testimony in the district court proceeding, and in which Mr. Yamamoto was subject to cross-examination, "has equivalent circumstantial guarantees of trustworthiness." Fed. R. Evid. 807(a)(1). Also, Petitioner offers the Yamamoto transcript as evidence of a material fact—the public availability of a prior art reference—and it is more probative on that point than any other evidence Petitioner can obtain through reasonable efforts because Mr. Yamamoto co-authored the Yamamoto reference and presented it at a conference of the Acoustical Society of Japan. *See* Fed. R. Evid. 807(a)(2), (3). Finally, admitting the Yamamoto transcript is in the interests of justice, as it provides as complete a record as possible regarding the public accessibility of the Yamamoto reference. *See* Fed. R. Evid. 807(a)(4); *see also* Paper 59, 8 (determining that submission of the Yamamoto transcript is in the interests of justice).

Finally, we are not persuaded by Patent Owner's argument that the Yamamoto transcript should be excluded under Federal Rules of Evidence 602, 603, and 604. Mr. Yamamoto's testimony indicates he was present at

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<sup>13</sup> We note that the parties stipulated, for purposes of the district court proceeding, that Mr. Yamamoto's testimony would be deemed former testimony under Rule 804(b), and Mr. Yamamoto was deemed unavailable under Rule 804(a). Ex. 1067 ¶ 6.



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the conference at which his paper was presented and had personal knowledge of the distribution of the paper, as required by Rule 602. *See* Ex. 2017. As for Rules 603 and 604, requiring an oath or affirmation by a witness and interpreter, respectively, they do not require exclusion of the Yamamoto transcript because the parties stipulated that it would be treated as sworn deposition testimony. *See* Ex. 1067 ¶ 5.

*b. Yamamoto Was Publicly Accessible in March 1996*

Under 35 U.S.C. § 102(b), a person is not entitled to a patent if “the invention was . . . described in a printed publication . . . more than one year prior to the date of the application for patent.” “The statutory phrase ‘printed publication’ has been interpreted to mean that before the critical date the reference must have been sufficiently accessible to the public interested in the art; dissemination and public accessibility are the keys to the legal determination whether a prior art reference was ‘published.’” *In re Cronyn*, 890 F.2d 1158, 1160 (Fed. Cir. 1989) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1568 (Fed. Cir. 1988)). The determination of whether a reference qualifies as a printed publication “involves a case-by-case inquiry into the facts and circumstances surrounding the reference’s disclosure to members of the public.” *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004).

In the present case, based on the circumstances surrounding the presentation and dissemination of the Yamamoto reference, we conclude that Yamamoto was publicly accessible in March 1996, more than one year before September 8, 1997, the effective filing date of claim 7 of the ’578 patent. As indicated on the first page of the reference, the Yamamoto reference was presented at the March 1996 Research Presentation

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Conference of the Acoustical Society of Japan. Ex. 1007, 1.

Mr. Yamamoto's testimony, which we find credible, confirms that he gave an oral presentation of the paper at Special Session A of the conference on March 26, 1996. Ex. 2017, 6:8–23, 13:23–14:3. According to Mr. Yamamoto's estimate, 100 to 150 people attended his presentation of the paper. *Id.* at 13:23–14:3.

The Acoustical Society created a book containing all the papers presented at the conference, including the Yamamoto paper. *Id.* at 8:12–23, 12:24–13:10, 15:18–19. Conference attendees were able to purchase a copy of the book at the time of registration. *Id.* at 13:8–10, 14:17–21. Beginning on the first day of the conference, copies of the book were “piled up on the registration desk for purchase, for anyone who wished to purchase.” *Id.* at 15:11–17. According to Mr. Yamamoto, many of his friends who attended the conference purchased a copy of the book. *Id.* at 9:18–10:2, 15:11–17. He also made the paper available to anyone who asked for a copy, and he recalls providing copies to subordinates of Mr. Fujioka, his co-author, though he does not recall the precise timing. *Id.* at 14:8–13, 16:6–14.

The facts of this case are similar to those in *MIT v. AB Fortia*, 774 F.2d 1104 (Fed. Cir. 1985). In that case, our reviewing court concluded that a paper that had been presented orally at a conference attended by 50 to 500 interested persons of ordinary skill in the art, and had been disseminated to at least six persons, was a printed publication for prior art purposes. *Id.* at 1109. Similarly, Mr. Yamamoto orally presented his paper to 100 to 150 persons of ordinary skill in the art, and many conference attendees received a copy of the book containing the paper. Ex. 2017, 9:18–10:2, 13:23–14:3, 15:11–17.

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Patent Owner argues that without a detailed analysis of factors such as the length of time the paper was displayed at a conference, the expertise of its target audience, the expectations regarding whether the material would be copied, and the ease with which it could be copied, Yamamoto cannot be considered prior art. Paper 63, 7–8 (citing *Klopfenstein*, 380 F.3d at 1350). Those factors, however, are relevant when determining the public accessibility of a reference that was displayed at a conference without distribution to the public. *Klopfenstein*, 380 F.3d at 1350. In contrast, the Yamamoto reference was included in a book of papers presented at the Acoustical Society conference that was available for purchase by all conference attendees, and actually was purchased by many attendees. Ex. 2017, 9:18–10:2, 12:24–13:10, 15:11–19.

Patent Owner also contends that the distribution of the Yamamoto reference does not show it was publicly accessible because there is no evidence that it occurred among people in the interested public. Paper 63, 8–9. Although Mr. Yamamoto could not recall if the Acoustical Society of Japan’s March 1996 conference was open to non-Society members, Ex. 2017, 7:23–8:11, attendance by at least 100 to 150 Society members is sufficient to show the Yamamoto reference was available to persons interested in the subject matter of the paper, voice recognition applications in communication systems. This case is distinguishable from those cited by Patent Owner, which involve papers posted online for a small, closed group of specialists. See Paper 63, 8–9 (citing *SRI Int’l Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1197 (Fed. Cir. 2008); *Samsung Elecs. Co. v. Rembrandt Wireless Techs., LP*, 2014 WL 4537478, at \*5, IPR2014-00515 (PTAB Sept. 9, 2014)).

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For these reasons, based on the facts and circumstances regarding the presentation and dissemination of the Yamamoto reference, we determine that Yamamoto was publicly accessible in March 1996. Yamamoto, therefore, qualifies as a printed publication that is available as prior art to claim 7 of the '578 patent.<sup>14</sup>

## 2. *Summary of Wycherley*

Wycherley describes a system for a relay service for establishing a telephone call between a hearing person and a hearing-impaired person. Ex. 1005, 1:6–10. To reduce the amount of time a service attendant is involved in such a telephone call, Wycherley's relay system automates some features by using text-to-speech processing and, on a limited basis, automatic speech recognition. *Id.* at Abstract. Wycherley's relay system includes Automatic Speech Recognition (ASR) units, which may be commercially available software and may be trained using a voice template, enabling the voice processor to recognize words uttered by the speaker in a call. *Id.* at 3:59–60, 4:26–28, 4:35–56. In the event of excessive translation errors by the automated translation of the hearing person's words, Wycherley's relay system transfers the telephone call to a call attendant, who “may request that the speaker repeat the substance of his or her response” and type the words spoken by the hearing person for transmission to the hearing impaired person's TDD terminal. *Id.* at 5:42–47; *see also id.* at 5:1–53.

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<sup>14</sup> Because we conclude that Yamamoto was publicly accessible in March 1996, we need not address Petitioner's argument and evidence regarding public accessibility in May 1996, when Petitioner asserts that the book containing Mr. Yamamoto's paper was received by the Japan Science and Technology Agency. *See* Paper 61, 6.

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### 3. *Summary of Yamamoto*

Yamamoto describes tests of voice recognition systems. Ex. 1007, 34–36. Along with other examples, Yamamoto describes a test with an operator assistance system for international calling, noting a preliminary step in an operator assistance system for international calling is “voice recognition of an operator repeating the question from the [international calling] user” to increase efficiency. *Id.* at 35. Yamamoto also describes testing of “a continuous speech recognition system driven by a context-free grammar.” *Id.* at 34.

### 4. *Claim 7*

To support its contention that claim 7 would have been obvious over Wycherley and Yamamoto, Petitioner provides analysis regarding the teachings of the references and relies on declaration testimony of Mr. Occhiogrosso. Pet. 33–37 (citing Ex. 1030<sup>15</sup>). Patent Owner responds, relying on declaration testimony of Mr. Ludwick. PO Resp. 48–59 (citing Ex. 2010). Having considered the parties’ contentions and supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 7 is unpatentable for obviousness over Wycherley and Yamamoto.

Wycherley teaches the first and last steps of claim 7, “providing words spoken by a remote user to a relay,” and “presenting the text stream to

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<sup>15</sup> As authorized in our order dated April 9, 2014 (Paper 18), Petitioner filed Exhibit 1030, the correct version of Mr. Occhiogrosso’s Declaration for this proceeding, as a replacement for Exhibit 1018, an incorrect version of Mr. Occhiogrosso’s Declaration originally filed with, and cited in, the Petition. *See* Ex. 1030, 1. We construe all citations to Exhibit 1018 in the Petition as citations to Exhibit 1030.

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an assisted user via a display.” Ex. 1005, 1:13–20, 1:27–37. Wycherley also teaches a call assistant at the relay listening to the words spoken by the remote user. *Id.* at 1:34–37. The dispute between the parties is whether the combination of Wycherley and Yamamoto teaches or suggests the remaining limitation—“at the relay, a call assistant . . . re-voicing the words into a computer with voice recognition software trained to the voice of the call assistant to create a text stream of the words spoken by the remote user.”

As Petitioner states, Wycherley’s relay service uses “caller-specific templates to implement speaker-dependent voice recognition directly on the voice of the unimpaired caller.” Pet. 33 (citing Ex. 1005, 3:43–4:56). Thus, Wycherley teaches using voice recognition software trained to the voice of *the remote user* (rather than the voice of the call assistant, as recited in claim 7) to create a text stream of the words spoken by the remote user, as recited in claim 7. Petitioner also relies on Yamamoto’s description of a call assistance system that uses voice recognition of an operator repeating a question from a caller as teaching or suggesting a computer with voice recognition software trained to the voice of the call assistant. *Id.* (citing Ex. 1007, 35). Petitioner further notes that both Wycherley and Yamamoto “involve the use of voice recognition to increase the efficiency of operator assisted telephone services.” Pet. 34. Accordingly, relying on Mr. Occhiogrosso’s testimony for support, Petitioner concludes “it would have been obvious to incorporate *Yamamoto*’s intermediate re-voicing solution into *Wycherley* during situations where . . . full automation was not practical.” *Id.* (citing Ex. 1030 ¶ 52). For example, Petitioner explains, if a remote user in Wycherley’s system had not created a voice template and a call was transferred to a call attendant, incorporating re-voicing using voice

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recognition trained to the call attendant's voice would have allowed the attendant to increase efficiency and make faster speech-to-text translations. *Id.* (citing Ex. 1030 ¶ 52). We credit Mr. Occhiogrosso's testimony and, thus, are persuaded that the combination of Wycherley's relay service, which uses automatic speech recognition on a remote user's voice, with Yamamoto's call assistance system, in which an operator repeats a caller's question into a voice recognition unit, would have taught or suggested to a person of ordinary skill in the art the re-voicing limitation of claim 7.

In addition, Petitioner has articulated sufficient reasoning with some rational underpinning to support the legal conclusion that the subject matter of claim 7 would have been obvious to one of ordinary skill in the art in view of the teachings of Wycherley and Yamamoto as combined in the manner proposed by Petitioner. *See KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). As noted by Petitioner, both references disclose using voice recognition systems to increase the efficiency of operator-assisted telephone services. Pet. 34; *see* Ex. 1005, 3:43–57; Ex. 1007, 35; Ex. 1030 ¶ 52. We agree that, at the time of the invention in 1997, particularly in view of the commercial availability of Dragon Naturally Speaking, it would have been obvious to one skilled in the art to mix and match the teachings of voice recognition systems used in operator-assisted telephone services as a whole to arrive at the claimed invention, because the method of claim 7 predictably uses known elements according to their established functions. *See KSR*, 550 U.S. at 417.

Patent Owner presents several arguments, none of which we find persuasive. *See* PO Resp. 48–57. First, Patent Owner contends that neither Wycherley nor Yamamoto teaches re-voicing using trained voice

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recognition software. *Id.* at 48–51. Specifically, Patent Owner contends that Wycherley’s system uses voice recognition software trained to the voice of the remote caller rather than trained to the call assistant’s voice, and Yamamoto does not describe using voice recognition trained to the voice of the operator. *Id.* at 49. Further, Patent Owner contends that Yamamoto does not disclose the call assistant re-voicing the words spoken by the remote user because the operator in Yamamoto rephrases the words spoken by the caller or repeats only key words because the system has a limited vocabulary. *Id.* at 51–52.

Patent Owner’s arguments regarding the teachings of Wycherley and Yamamoto are directed to whether either reference individually teaches a call assistant re-voicing the words into a computer with voice recognition software trained to the voice of the call assistant, as recited in claim 7. The pertinent question, however, is whether the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art in view of the combined teachings of the references. 35 U.S.C. § 103(a); *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981). By unduly focusing on the teachings of the references in isolation, Patent Owner fails to address what the combination of those teachings would have suggested to a person of ordinary skill in the art at the time of invention of claim 7 of the ’578 patent.

We also are unpersuaded by Patent Owner’s arguments that a person of ordinary skill in the art would not have considered Wycherley. *See* PO Resp. 53–55. First, Patent Owner relies on Mr. Ludwick’s testimony regarding the state of the art in 1990, which has little probative value because obviousness is determined as of the time of invention, i.e., 1997. *See id.* at 53 (citing Ex. 2010 ¶¶ 56–57). Second, Patent Owner contends



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that a person of ordinary skill in the art would have known that some features of a commercial implementation of Wycherley's relay were "disliked by customers," but does not identify particular aspects that are less desirable. *Id.* at 54. Third, Patent Owner argues that Wycherley's focus on creating a more cost-effective relay by reducing the call assistant's involvement teaches away from a re-voicing relay design. *Id.* This argument is unpersuasive because Patent Owner does not identify where Wycherley criticizes, discredits, or otherwise discourages re-voicing using voice recognition software trained to the voice of a call assistant. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

Patent Owner further submits that modifying Wycherley so that the relay agent repeats the remote user's words would render Wycherley unsatisfactory for its intended purpose of providing "a more cost effective relay service by reducing or eliminating the need for the relay agent." PO Resp. 55–56. We disagree, because we credit Mr. Occhiogrosso's testimony that providing Wycherley's call assistants with trained voice recognition software would increase their efficiency, and thus help achieve Wycherley's goal of providing a more cost-effective relay service. *See Ex. 1030* ¶ 52.

Finally, Patent Owner contends that Yamamoto teaches away from the claimed invention because Yamamoto states that "continuous speech and spontaneous speech recognition [was still] not commercially viable." PO Resp. at 57 (citing Ex. 1007, 33; Ex. 2010 ¶ 60). We do not find Patent Owner's argument to be persuasive. First, we do not agree that Yamamoto provides that "recognition of continuous speech and spontaneous speech recognition is not yet commercially viable" in all contexts. Rather, Yamamoto teaches that particular techniques, such as word spotting, are

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useful in contexts in which “recognition of continuous speech and spontaneous speech recognition is not yet commercially viable.” Ex. 1007, 33. Yamamoto, however, also indicates that “[v]oice-recognition systems [and] voice recognition software . . . have arrived at a usable state,” and “a variety of voice recognition systems in communication networks are also becoming commercially available.” *Id.* Thus, Yamamoto does not criticize, discredit, or otherwise discourage using voice recognition trained to the voice of a call assistant at a relay.

### 5. *Secondary Considerations*

Factual inquiries for an obviousness determination include secondary considerations based on evaluation and crediting of objective evidence of nonobviousness. *Graham*, 383 U.S. at 17–18. Notwithstanding what the teachings of the prior art would have suggested to one with ordinary skill in the art at the time of the invention, the totality of the evidence submitted, including objective evidence of nonobviousness, may lead to a conclusion that the challenged claims would not have been obvious to one with ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). Secondary considerations may include any of the following: long-felt but unsolved need, failure of others, unexpected results, commercial success, copying, licensing, and praise. *See Graham*, 383 U.S. at 17; *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007).

To be relevant, evidence of nonobviousness must be commensurate in scope with the claimed invention. *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011). Thus, to be accorded substantial weight, there must be a nexus between the merits of the claimed invention and the evidence of secondary considerations. *GPAC*, 57 F.3d at 1580. “Nexus” is a legally and factually

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sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in determining nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). The burden of showing that there is a nexus lies with the Patent Owner. *Id.*; *Paulsen*, 30 F.3d at 1482.

Patent Owner alleges “substantial praise for the inventions claimed in [Patent Owner’s] patents, including the ’578 Patent, the long-felt but unresolved need of the deaf and hard of hearing community, the commercial success of the products and services embodying the invention, and the failure of others to provide a relay service or other solution that provided the benefits of the claimed inventions.” PO Resp. 58–59. For support, Patent Owner proffers declarations by Ms. Brenda Battat (Ex. 2004) and Ms. Constance Phelps (Ex. 2005) describing general innovations of Patent Owner’s CapTel Service and its CapTel phone and their benefits to the deaf and hard of hearing community. PO Resp. 58–59. In an attempt to establish the requisite nexus, Patent Owner relies on a declaration of Mr. Ludwick (Ex. 2002) asserting that his expert declaration “explain[s], on a feature by feature basis, the nexus between those secondary considerations and the claimed design” and “illustrates, in chart form, that the CapTel system and various models of CapTel phones embody the claims of the present invention.” PO Resp. 59.

Patent Owner’s Response contains no substantive arguments. *Id.* at 58–59. Instead, Patent Owner merely lists various common forms of secondary considerations evidence, without exposition. This does not provide sufficient analysis for us to determine whether Patent Owner has provided adequate evidence of secondary considerations and a nexus

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between any such evidence and the merits of the claimed invention. Thus, Patent Owner's broad contentions regarding secondary considerations in its Patent Owner Response do not demonstrate nonobviousness.

Moreover, Patent Owner's declarations fail to establish a nexus between the merits of the claimed invention and the evidence of secondary considerations. To show a nexus, Patent Owner relies on Mr. Ludwick's declaration, which describes his visit to CapTel, Inc.'s relay center in Madison, Wisconsin. Ex. 2002 ¶ 47. Mr. Ludwick's chart presents his conclusions based on personal observation that the CapTel Service meets each claim limitation of the '578 patent. Ex. 2002 ¶ 48 (pp. 31–32). For example, regarding “at the relay, a call assistant listening to the words spoken by the remote user and re-voicing the words into a computer with voice recognition software trained to the voice of the call assistant to create a text stream of the words spoken by the remote user,” recited in claim 7, Mr. Ludwick asserts:

I personally observed that the CapTel Service meets this claim element. I further confirmed this from my own knowledge of CapTel Service. This step of the CapTel Service relay is performed when the service is used with each of the CapTel Phones and has always been included as part of the CapTel Service.

Ex. 2002 ¶ 48 (p. 31).

Because Mr. Ludwick's conclusions are based on personal observations, without sufficient supporting facts or data, his testimony has little probative value. *See Am. Acad. of Sci.*, 367 F.3d at 1368 (“[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the

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declarations.”); *see also* Fed. R. Evid. 702 (providing one may testify in the form of an opinion if the testimony is based on sufficient facts or data). As such, Mr. Ludwick’s conclusory assertions do not provide a sufficient connection between objective evidence and the claimed invention, and so do not establish the requisite nexus between the merits of the claimed invention and the evidence of secondary considerations.

Accordingly, Patent Owner fails to provide sufficient credible evidence to support its allegations of nonobviousness based on secondary considerations. When we balance Petitioner’s evidence of obviousness against Patent Owner’s asserted objective evidence of nonobviousness, we determine that a preponderance of the evidence supports Petitioner’s position that claim 7 would have been obvious over Wycherley and Yamamoto.

*F. Asserted Ground of Obviousness over Ryan and McLaughlin*

Petitioner contends that claims 7–11 are unpatentable under 35 U.S.C. § 103(a) as obvious over Ryan and McLaughlin, relying on declaration testimony of Mr. Occhiogrosso. Pet. 43–51 (citing Ex. 1030). Patent Owner responds, relying on declaration testimony of Mr. Ludwick. PO Resp. 35–48 (citing Ex. 2010). Having considered the parties’ contentions and supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 8–11, but not claim 7, are unpatentable for obviousness over Ryan and McLaughlin.

*1. Summary of McLaughlin*

McLaughlin describes a simultaneous voice and data (SVD) modem used in connection with a relay service in which an operator mediates

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communications between a hearing person and a hearing-impaired person. Ex. 1009, 30:13–31:63. In one embodiment described in McLaughlin, the hearing-impaired user has an answering device or system, comprising two SVD modems, connected to two communication links, Line A and Line B. *Id.* at 30:59–63, 32:17–19. These communication links may use local area network (LAN), wide area network (WAN), or Internet communications over analog lines or digital lines, such as Integrated Services Digital Network (ISDN) or digital subscriber line (DSL) technology. *Id.* at 30:46–53. When a voice call from the hearing user arrives on Line A, the answering device sets up an SVD link with the relay service on Line B. *Id.* at 31:35–40. Voice sounds received from the hearing user on Line A are sent to the relay operator on Line B. *Id.* at 31:41–43. The relay operator translates the voice sounds into text, which is sent over Line B to appear on the screen of the hearing-impaired user’s answering device. *Id.* at 31:43–47. The hearing-impaired user also types responses back to the relay operator over Line B. *Id.* at 31:47–49. The relay operator voices the text, and the relay operator’s voice sounds are carried on Line B to the hearing-impaired user’s answering device and passed over to Line A to be heard by the hearing user. *Id.* at 31:49–52. Conversation among all three parties is “full duplex,” so that all parties may talk or type simultaneously. *Id.* at 31:55–62.

## 2. Claim 7

As discussed, claim 7 has an effective filing date of September 8, 1997. McLaughlin issued on January 30, 2001, with a filing date of March 18, 1998. Ex. 1009. Petitioner asserts that McLaughlin is entitled to the benefit of the filing date of its provisional application, March 25, 1997, and, therefore, is prior art to claim 7 under 35 U.S.C. § 102(e). Pet. 26. Patent

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Owner responds that, assuming the effective filing date of claim 7 is September 8, 1997, McLaughlin is not prior art because Petitioner has not shown McLaughlin is entitled to claim the benefit of the filing date of its provisional application. PO Resp. 35. In its Reply, Petitioner submits that the burden shifted to Patent Owner to disprove McLaughlin's entitlement to the earlier filing date because Petitioner attached both McLaughlin and its provisional to the Petition. Reply 2.

We agree with Patent Owner that Petitioner has not shown that McLaughlin is prior art to claim 7 under § 102(e). To be entitled to rely on the March 25, 1997, provisional filing date, Petitioner must demonstrate it relies on subject matter that is present in and supported by the provisional. *See In re Giacomini*, 612 F.3d 1380, 1383 (Fed. Cir. 2010). Although Petitioner filed the McLaughlin provisional application, Exhibit 1024, with the Petition, Petitioner has not provided any explanation of how the provisional supports the subject matter relied upon for its asserted obviousness ground. The McLaughlin provisional appears to be an invention disclosure that, on its face, does not resemble the issued patent. *Compare* Ex. 1024 *with* Ex. 1009. Given this lack of resemblance, Patent Owner's challenge to whether Petitioner has shown sufficient support, and Petitioner's failure to identify material in the provisional that provides support for portions of McLaughlin relied upon by Petitioner, we are unable to find that McLaughlin is § 102(e) prior art to claim 7 of the '578 patent. Thus, Petitioner has not shown by a preponderance of the evidence that claim 7 is unpatentable for obviousness over Ryan and McLaughlin.

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### 3. *Claims 8–11*<sup>16</sup>

Claims 8–11 depend from independent claim 7. As discussed above, Ryan teaches all of the limitations of claim 7. *See supra* II.D.3. As Petitioner asserts, McLaughlin also teaches two of the limitations of claim 7—providing words spoken by a remote user to a relay, and presenting the text stream to an assisted user via a display. *See* Pet. 46–47 (citing Ex. 1009, 29:20–27, 31:41–47). For the additional limitations in dependent claims 8–11, Petitioner relies on McLaughlin. Pet. 47–51.

Claim 8 recites “receiving the words spoken at a captioned telephone device and transmitting the words spoken from the captioned telephone device to the relay.” Claim 9 depends from claim 8 and further recites “transmitting the text stream from the relay to the captioned telephone device.” We agree with Petitioner that McLaughlin teaches these limitations with its description of an assisted user’s answering device that receives voice sounds from a hearing user on Line A, transmits those sounds to the relay operator on Line B, and receives text from the relay operator on Line B. *See* Pet. 47–49 (citing Ex. 1009, 31:41–47; 32:41–43).

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<sup>16</sup> If we treated the preamble of claim 7 as a limitation that requires receiving the remote user’s voice at the assisted user’s location, Petitioner asserts that the effective filing date of claim 7 would be no earlier than February 14, 2001, the filing date of U.S. Patent No. 6,594,346, and McLaughlin would be prior art to claim 7 under 35 U.S.C. § 102(a) and § 102(e). Pet. 14, 26. Patent Owner does not challenge these assertions. Thus, if we construed claim 7 to include the additional limitation, which is recited explicitly in claim 8 (“receiving the words spoken at a captioned telephone device”), the analysis with respect to claim 8 would apply also to claim 7. Our conclusion for claim 7 then would be the same as for claim 8, i.e., that Petitioner has shown by a preponderance of the evidence that claim 7 would have been obvious over the combination of Ryan and McLaughlin.



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Patent Owner argues that McLaughlin does not teach a captioned telephone device because (i) McLaughlin's answering device does not play audio of the remote user's voice to the assisted user, and (ii) McLaughlin does not teach a device located at an assisted user's station that performs all the functions of a captioned telephone device. PO Resp. 36–41. We find Patent Owner's arguments unpersuasive. First, the claim language does not require providing audio of the remote user's voice to the assisted user. Rather, claim 8 requires receiving the remote user's voice at a captioned telephone device and transmitting the voice to the relay. Similarly, our construction of "captioned telephone device" only requires a device that receives and transmits voice signals, not one that makes the received voice signals audible to the assisted user. *See supra* II.A.1. Second, McLaughlin teaches an answering device that receives voice on Line A and transmits voice and receives text on line B using SVD modems, and also includes a screen for displaying text to a hearing-impaired user, thereby meeting the requirements of a captioned telephone device as we have construed the term. Ex. 1009, 30:46–48, 30:59–63, 31:41–47; 32:41–52. On this point, based on our review of McLaughlin, we credit the testimony of Petitioner's declarant, Mr. Occhiogrosso, over that of Patent Owner's declarant, Mr. Ludwick. *See* Ex. 1030 ¶¶ 41–44; Ex. 2010 ¶¶ 32–34.

Claims 8 and 9 further require that voice and text be transmitted over a cellular or wireless connection, and claims 10 and 11 require that voice be transmitted to the relay via an Internet Protocol (IP) connection. As Petitioner indicates, McLaughlin states that LAN, WAN, or Internet communications, such as those used in McLaughlin's relay system, may be wireless. Pet. 48 (citing Ex. 1009, 6:44–48, 30:46–53). McLaughlin also

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states that Internet communication links conform to a known protocol, such as TCP/IP (Transmission Control Protocol/Internet Protocol). Ex. 1009, 1:31–36. Although McLaughlin does not mention wireless or IP communications specifically in connection with a relay service, we find that the general discussion of communication technologies and protocols applies to all of the embodiments described in McLaughlin, including the relay service, and at the very least suggests to a person of ordinary skill in the art the use of wireless and IP connections.

Petitioner also has articulated sufficient reasoning with some rational underpinning to support the legal conclusion that the subject matter of the claims would have been obvious to one of ordinary skill in the art in view of the teachings of Ryan and McLaughlin as combined in the manner proposed by Petitioner. *See KSR*, 550 U.S. at 418; Pet. 43–44 (citing Ex. 1030 ¶¶ 61–62); Reply 9–10 (citing Ex. 1057 ¶¶ 61–68). McLaughlin teaches most of the limitations of claims 8–11, including a two-line captioned telephone device. McLaughlin, however, does not teach re-voicing the remote user’s words at the relay using voice recognition software trained to the voice of the call assistant, as recited in independent claim 7. Instead, McLaughlin describes a relay service with a call assistant, but also indicates that a relay may use automated equipment. Ex. 1009, 29:20–22. Ryan teaches using speech recognition software to automate the relay function, but further teaches that the accuracy of the relay may be improved if a call assistant re-voices the remote user’s words into voice recognition software designed to recognize the call assistant’s voice. Ex. 1004, 4:33–38. We are persuaded that a person of ordinary skill in the art would have looked to Ryan for ways to automate the relay function in McLaughlin’s system and would have

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recognized that Ryan’s intermediate re-voicing solution—using voice recognition software trained to the call assistant’s voice—would perform better than speaker-independent voice recognition applied directly to the remote user’s voice. *See* Pet. 44; Ex. 1030 ¶ 61.

Patent Owner contends that the claims would not have been obvious over Ryan and McLaughlin because combining Ryan and McLaughlin would require a substantial redesign of McLaughlin and change its principle of operation. PO Resp. 46. We disagree and credit the testimony of Mr. Occhigrosso that such a combination would not be difficult for a person of ordinary skill in the art to implement. *See* Reply 10; Ex. 1057 ¶ 61. Moreover, McLaughlin focuses on a network configuration that uses simultaneous voice and data (SVD) modems in conjunction with a relay, not the details of how a relay translates voice to text during a call between a remote user and an assisted user. *See* Ex. 1009, 30:13–31:63. Thus, we are not persuaded that McLaughlin’s principle of operation is “the use of a conventional relay for typed transactions,” as Patent Owner asserts. *See* PO Resp. 46.

Patent Owner also argues that McLaughlin teaches away from the use of trained voice recognition software. *Id.* at 46–47. In particular, Patent Owner submits that McLaughlin explains the shortcomings of automated speech recognition technology. *Id.* (citing Ex. 1009, 26:54–62). McLaughlin’s statement, however, involves the application of speech recognition to voice messages left by callers, not voice recognition software trained to the voice of a call assistant, i.e., speaker-dependent voice recognition. McLaughlin, therefore, does not criticize, discredit, or

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discourage the combination of Ryan's re-voicing technique with McLaughlin's system.

As discussed in connection with obviousness based on Wycherley and Yamamoto, Patent Owner has not provided sufficient credible evidence to support its allegations of nonobviousness based on secondary considerations. When we balance Petitioner's evidence of obviousness against Patent Owner's asserted objective evidence of nonobviousness, we determine that a preponderance of the evidence supports Petitioner's position that claims 8–11 would have been obvious over Ryan and McLaughlin.

### III. CONCLUSION

Based on the evidence and arguments, Petitioner has demonstrated by a preponderance of the evidence that:

(1) claim 7 is unpatentable under 35 U.S.C. § 102(e) as anticipated by Ryan;

(2) claim 7 is unpatentable under 35 U.S.C. § 103(a) as obvious over Wycherley and Yamamoto; and

(3) claims 8–11 are unpatentable under 35 U.S.C. § 103(a) as obvious over Ryan and McLaughlin.

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#### IV. ORDER

Accordingly, it is:

ORDERED that claims 7–11 of U.S. Patent No. 8,213,578 B2 are unpatentable;

FURTHER ORDERED that Patent Owner’s Motion to Exclude Mr. Occhiogrosso’s testimony is *denied*; and

FURTHER ORDERED that Patent Owner’s Motion to Exclude the Yamamoto reference is *denied*.

This is a final decision. Parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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PETITIONER:

Brian W. Oaks

Bryant C. Boren Jr.

Harper S. Batts

Adam F. Smoot

Joseph Gray

BAKER BOTTS L.L.P.

brian.oaks@bakerbotts.com

bryant.c.boren@bakerbotts.com

harper.batts@bakerbotts.com

adam.smoot@bakerbotts.com

joseph.gray@bakerbotts.com

PATENT OWNER:

Michael Jaskolski

Martha Snyder

Nikia L. Gray

Michael J. Curley

QUARLES & BRADY LLP

michael.jaskolski@quarles.com

martha.snyder@quarles.com

nikia.gray@quarles.com

michael.curley@quarles.com

Trials@uspto.gov  
Tel: 571-272-7822

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CAPTIONCALL, L.L.C.,  
Petitioner,

v.

ULTRATEC, INC.,  
Patent Owner.

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Case IPR2013-00544  
Patent 8,213,578 B2

Before WILLIAM V. SAINDON, BARBARA A. BENOIT, and  
LYNNE E. PETTIGREW, *Administrative Patent Judges*.

PETTIGREW, *Administrative Patent Judge*.

DECISION  
Patent Owner's Request for Rehearing  
*37 C.F.R. § 42.71*

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## I. INTRODUCTION

Petitioner, CaptionCall, L.L.C., filed a Petition requesting an *inter partes* review of claims 7–11 of U.S. Patent No. 8,213,578 B2 (Ex. 1001, “the ’578 patent”). Paper 1 (“Pet.”). We instituted an *inter partes* review for claims 7–11. Paper 6. In our Final Written Decision, we determined that Petitioner had shown, by a preponderance of the evidence, that claims 7–11 were unpatentable. Paper 74 (“Final Dec.” or “Final Decision”). Patent Owner, Ultratec, Inc., requests a rehearing of the Final Decision by an expanded panel. Paper 75 (“Req.” or “Request”). Having considered Patent Owner’s Request, we grant the Request for Rehearing for the limited purpose of modifying our analysis regarding the rationale for combining the Ryan and McLaughlin references. We deny the Request for Rehearing in all other respects.

## II. DISCUSSION

The party challenging a decision in a request for rehearing bears the burden of showing the decision should be modified. 37 C.F.R. § 42.71(d). A request for rehearing “must specifically identify all matters the party believes the Board misapprehended or overlooked, and the place where each matter was previously addressed.” *Id.*

### *A. Status of Ryan as Prior Art*

In the Final Decision, in response to Patent Owner’s argument that Ryan<sup>1</sup> did not qualify as prior art because it was not enabled (Paper 27, 15–23 (“PO Resp.”)), we determined that Ryan was enabled prior to the date of

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<sup>1</sup> U.S. Patent No. 5,809,112 (Ex. 1004).



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invention of the challenged patent in 1997 and, therefore, qualified as prior art to the challenged claims. Final Dec. 21–25.

In its Request for Rehearing, Patent Owner argues, as it did in its Patent Owner Response, that for a patent to serve as prior art the patent must be enabled as to its own earliest claimed effective filing date in 1994. Req. 1–4; PO Resp. 15–22. We addressed this argument in the Final Decision and additionally examined the evidence of record as to whether Ryan would have enabled one of ordinary skill in the art to make the invention without undue experimentation prior to the date of invention of the challenged patent. Final Dec. 22–25. We are not persuaded that we overlooked or misapprehended Patent Owner’s prior argument or made an erroneous interpretation of law.

Patent Owner additionally argues that our consideration of Ryan as prior art as of the date of invention of the challenged patent (1997), was “substantially different than the adopted ground” at issue in the *inter partes* review because the Petition (Paper 1) did not discuss this issue. Req. 4 (“The Petition only discussed potential priority dates in 1994 and 1996, not 1997.”). We disagree. As noted in our Decision to Institute, *inter partes* review was instituted for “[c]laim 7 as anticipated under 35 U.S.C. § 102 by Ryan.” Paper 6, 21 (IV. ORDER). During the *inter partes* review, Patent Owner argued, in its Patent Owner Response, that Ryan did not anticipate claim 7 (PO Resp. 15–35), including a challenge to the prior art status of Ryan (*id.* at 15–23). The Final Decision discussed the instituted ground of anticipation by Ryan and addressed Patent Owner’s assertions, including those regarding the prior art status of Ryan. Final Dec. 19–29.

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In a similar vein, Patent Owner argues it should have received express notice “that enablement would be assessed in 1997” so it could submit evidence concerning enablement in 1997. Req. 5. We are not persuaded by this argument. First, Patent Owner expressly argued this issue its Patent Owner Response. PO Resp. 21 (“Even if the Board determines that Petitioner may show that Ryan was enabled at any point before the date of invention for the claimed use of revoicing in a telecommunications relay service, Petitioner will be unable to make that showing.”); *see id.* at 22 (asserting the date of invention of June 23, 1997). Thus, Patent Owner submitted arguments concerning enablement in 1997, the very issue about which Patent Owner now contends it was not informed and so missed the opportunity to submit relevant evidence. Moreover, as noted in our Final Decision, Patent Owner and Petitioner did not dispute that the “re-voicing limitation” was enabled on June 23, 1997, with the release of commercial voice recognition software to the public. Final Dec. 22 (citing PO Resp. 22; Reply 3; Exs. 2011, 2012, 2013). As noted in our Final Decision, public availability of the commercial voice recognition software as of 1997 is corroborated by U.S. Patent No. 5,909,482, incorporated by reference into the challenged patent. *Id.* (quoting Ex. 1002, 5:51–57).

Patent Owner further asserts we overlooked evidence that the invention was conceived and diligently reduced to practice before Ryan was enabled. Req. 4 (citing Exs. 2011, 2012, 2013). We did not overlook this evidence. Rather, we examined this evidence in our Final Decision and found the evidence insufficient. Final Dec. 22 (“Patent Owner’s earliest proffered evidence dates back only to August 5, 1997, not to June 23, 1997,”

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when Ryan was enabled); *see id.* at 21–22 (analyzing Patent Owner’s evidence offered in Exhibits 2011, 2012, and 2013).

For these reasons, we are not persuaded that we overlooked or misapprehended Patent Owner’s prior argument or made an erroneous interpretation of law concerning the availability of Ryan as prior art to the challenged claims.

*B. Yamamoto Transcript*

Patent Owner contends we circumvented our own rules in admitting the transcript<sup>2</sup> of a videotaped interview with Mr. Seiichi Yamamoto, the first named author of the Yamamoto reference.<sup>3</sup> Req. 5–7. The interview was conducted in connection with a related district court proceeding between the parties. *See* Final Dec. 31. In the district court proceeding, the parties stipulated that the Yamamoto transcript—a stenographic record of the English portion of the interview (questions from both parties and an interpreter’s translation of Mr. Yamamoto’s testimony)—would be treated as sworn deposition testimony in the district court proceeding and, “[w]ith respect to other proceedings, the stenographic record will be treated as a sworn deposition taken in [the district court proceeding] at which both parties appeared and had the opportunity to question the witness.” Ex. 1067 ¶ 5 (Stipulation Regarding Seiichi Yamamoto). As explained in our Final Decision, we granted Petitioner’s motion to submit the Yamamoto transcript as supplemental information under 37 C.F.R. § 42.123(b) relating to the

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<sup>2</sup> Ex. 2017 (Videoconference Deposition of Seiichi Yamamoto, Aug. 20, 2014) (“Yamamoto transcript”).

<sup>3</sup> Yamamoto is a Japanese language document—Seiichi Yamamoto and Masanobu Fujioka, *New Applications of Voice Recognition*, Proc. JASJ Conf. (March 1996) (Ex. 1006; Ex. 1007 (English language translation)).

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prior art status of Yamamoto and, after supplemental briefing by the parties, determined the Yamamoto transcript was admissible. Final Dec. 31–35.

Patent Owner argues in its Request for Rehearing that the Yamamoto transcript is inadmissible because it does not satisfy the requirements that all testimony, other than uncompelled direct testimony, must be in the form of a deposition transcript, 37 C.F.R. § 42.53(a), and that the witness shall be sworn, 37 C.F.R. § 42.53(f)(1). Req. 5. Therefore, according to Patent Owner, the Yamamoto transcript was “not taken, sought, or filed in accordance with these regulations [and] is not admissible.” *Id.* (citing 37 C.F.R. § 42.61(a)). Rule 42.53, however, is titled “Taking Testimony,” and applies only to testimony taken “during a testimony period set by the Board” for purposes of a particular review proceeding. 37 C.F.R. § 42.53(b); *see also* 37 C.F.R. § 42.53(c) (providing time limits set by the Board); *id.* § 42.53(d) (providing notice requirements). As stated in our Final Decision, Petitioner sought to admit the Yamamoto transcript as a deposition taken in the district court proceeding, not as deposition testimony taken in this *inter partes* proceeding. Final Dec. 32. And based on the parties’ stipulation in district court, we treated the Yamamoto transcript as sworn deposition testimony taken in the district court. *Id.* at 32–33 (citing Ex. 1067 ¶ 5). Petitioner filed the Yamamoto transcript as supplemental information under 37 C.F.R. § 42.123(b), establishing that the Yamamoto transcript reasonably could not have been obtained earlier and that its consideration was in the interests of justice. Paper 59, 7–8. Therefore, Petitioner’s filing of the Yamamoto transcript complied with Board rules, and we properly relied on it in determining the public accessibility of Yamamoto. *See* Final Dec. 35–38.

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Having reviewed Patent Owner's Request, we are not persuaded we misapprehended or overlooked any matter relating to the admissibility of the Yamamoto transcript.

*C. Claim Construction*

Because the parties articulated different views on how “trained to the voice of the call assistant” should be interpreted relative to the asserted prior art, we analyzed Patent Owner's implied constructions of the term and Patent Owner's declarant's testimony concerning the same. Final Dec. 11–13. In its Request for Rehearing, Patent Owner argues that we “misapprehended claim construction law” in determining software “trained to the voice of the call assistant” was not limited to training to the voice of one and only one particular call assistant and did not preclude voice recognition software that is designed or built in advance of implementation at the source code level to the voice of a call assistant. Req. 7–10.

First, Patent Owner contends that we erroneously relied on the disclosure in the '578 patent of “voice pattern.” *Id.* at 7–9. We disagree that our reliance on the “Brief Summary of the Invention,” which refers to “a speech recognition computer program which has been trained to the voice *pattern* of the call assistant,” was improper. *See* Final Dec. 12 (quoting Ex. 1001, 2:44–46 (emphasis added)). Rather, in our Final Decision, we determined that the '578 patent contemplated software trained to a “voice *pattern* of the call assistant,” as set forth in the “Brief Summary of the Invention,” as well as software “specifically trained to the voice of [a] *particular* call assistant,” as described in the context of a particular relay embodiment shown in Figure 1. Final Dec. 12 (quoting Ex. 1001, 2:44–46; Ex. 1002, 5:44–47).

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Based on the evidence in the written description (including the disclosure of “voice pattern”), we determined that the ’578 patent did not indicate expressly how training occurs. *Id.* Giving the claim language its broadest reasonable construction in light of the specification, we concluded we would not limit “trained to the voice of the call assistant” to require training to the voice of one particular call assistant. *Id.*

We turn next to Patent Owner’s argument in its Request for Rehearing that we erred in concluding that “trained to the voice of the call assistant” does not include a temporal constraint that precludes voice recognition software that is designed or built in advance of implementation at the source code level to the voice pattern of a call assistant. Req. 9–10 (citing Final Dec. 11). Patent Owner asserts that we overlooked an alleged admission at the Hearing by Petitioner that the claim language inherently includes a temporal constraint that precludes training when the software is designed in advance of implementation at the source code level. Req. 10 (citing Paper 75 (Hearing Transcript), 17:3–5). We are not persuaded that we did so. Rather, we considered Petitioner’s statement at the Hearing in light of the evidence of record.

In our Final Decision, we determined that the written description discloses that the voice recognition software package is trained but does not indicate when or how the training occurs. Final Dec. 12. We rejected Patent Owner’s argument, relying on its declarant, that software “designed” is not software that is “trained to recognize individual voices” because we found insufficient support for Patent Owner’s contention. *Id.* (citing PO Resp. 24). As we explained in our Final Decision, Patent Owner’s declarant testified that a person of ordinary skill in the art would not have understood “trained”

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software to include “designed” software because technology to train software to recognize individual voices did not exist in 1994 and was not used in telecommunications relay service at that time. *Id.* (citing PO Resp. 29–30; Ex. 2010 ¶¶ 21–22). We weighed this testimony, which relied on capabilities of technology available in 1994, and concluded this testimony had little probative value of the understanding of one of ordinary skill in the art at the time of invention because the earliest date of invention for claims of the ’578 patent was 1997. *Id.* The weight we gave to the testimony of Patent Owner’s declarant reflected the parties’ agreement that commercial software that could be trained to recognize individual voices was available in 1997, as discussed previously. *See* Final Dec. 22 (citing PO Resp. 22; Reply 3; Exs. 2011, 2012, 2013). In other words, the understanding of one of ordinary skill as of 1997 was crucial given the shift in technology at that time, and the testimony of Patent Owner’s declarant was only reflective of the understanding prior to this shift.

Moreover, Petitioner’s declarant indicates that one of ordinary skill in the art would have understood that Ryan describes speech recognition software trained to the voice of a call assistant. Ex. 1057 ¶¶ 51–52. The testimony of Petitioner’s declarant is supported further by prior art of record that indicates voice recognition software trained to a particular user in relay systems was known. *See id.* ¶ 52 (citing Ex. 1005, 4:37–49). This testimony further undermines Patent Owner’s position.

Thus, we do not agree with Patent Owner that we erred by not considering Petitioner’s purported “admission” made at the Hearing. Rather, we considered Petitioner’s statement in determining that Ryan’s description of benefits provided by voice recognition software that “is specifically

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designed to recognize the voice of particular relay agents” (Ex. 1004, 4:33–38) discloses the trained software recited in the claims of the ’578 patent. *See* Final Dec. 25–29.

For the reasons given, we are not persuaded that we misapprehended claim construction law in our construction of “trained to the voice of the call assistant.”

#### *D. Combination of Ryan and McLaughlin*

In its Request for Rehearing, Patent Owner contends we misapprehended the law regarding motivation to combine references in our discussion of obviousness of claims 8–11 of the ’578 patent based on Ryan and McLaughlin.<sup>4</sup> Req. 10–12. Although we disagree that we misapprehended the law, we grant Patent Owner’s request for the purpose of modifying our analysis regarding the rationale for combining Ryan and McLaughlin (Final Dec. 52–54) as described below. As in our Final Decision, we conclude that Petitioner has articulated sufficient reasoning with some rational underpinning to support the legal conclusion that the subject matter of the claims would have been obvious to one of ordinary skill in the art in view of the teachings of Ryan and McLaughlin. *See KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007); Pet. 43–44; Reply 9–10; Ex. 1030 ¶¶ 61–62; Ex. 1057 ¶¶ 60–62. The remainder of this section replaces the three paragraphs of the Final Decision addressing the rationale for combining Ryan and McLaughlin, beginning on page 52 and continuing through the first two lines on page 54.

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<sup>4</sup> U.S. Patent No. 6,181,736 B1, issued Jan. 30, 2001 (Ex. 1009).



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McLaughlin teaches most of the limitations of claims 8–11, including a two-line captioned telephone device. McLaughlin, however, does not teach re-voicing the remote user's words at the relay using voice recognition software trained to the voice of the call assistant, as recited in independent claim 7. Instead, McLaughlin describes a relay service in which a call assistant or automated equipment mediates telephone calls between a speaking person and a deaf person. Ex. 1009, 29:20–22. McLaughlin also identifies computerized speech recognition as one type of automated equipment for translating voice to text, although McLaughlin acknowledges the limitations of speech recognition software in recognizing certain kinds of speech, including conversational speech. *Id.* at 26:59–62.

Ryan teaches using speech recognition software to automate the relay function. Ex. 1004, 4:19–28. According to Mr. Occhiogrosso, whose testimony we credit on this point, it was well known in the field of speech recognition at the time of the invention that speaker-dependent speech recognition (e.g., trained to the voice of a particular speaker) performed better than untrained, speaker-independent speech recognition. Ex. 1030 ¶¶ 22, 61; Ex. 1057 ¶ 62. This is reflected in Ryan's teaching that the accuracy of a relay that uses speech recognition software may be improved if a call assistant re-voices the remote user's words into a terminal with voice recognition software designed to recognize the call assistant's voice. Ex. 1004, 4:33–38.

Thus, McLaughlin teaches the use of automated equipment at a relay, Ex. 1009, 29:20–22, and Ryan teaches a computer with speech recognition software as one form of automated equipment that can be used at a relay, Ex. 1004, 4:33–38. McLaughlin also notes the use of computerized speech

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recognition in another, but similar, context, i.e., translation of voice mail messages from voice to text. Ex. 1009, 26:59–62. A person of ordinary skill in the art would have recognized that Ryan’s intermediate re-voicing solution—using voice recognition software trained to the voice of a call assistant at a relay—would address the shortcomings of applying voice recognition directly to a remote caller’s voice, acknowledged by McLaughlin. *See* Pet. 44; Reply 9–10; Ex. 1030 ¶ 61; Ex. 1057 ¶ 62. As Mr. Occhiogrosso explains, combining the teachings of Ryan and McLaughlin to achieve the claimed invention involves nothing more than directing the captioned telephone device of McLaughlin to connect to a re-voicing relay, as taught in Ryan, rather than a conventional relay. Ex. 1057 ¶ 61; *see* Reply 10. For these reasons, we are persuaded that a person of ordinary skill in the art would have combined the teachings of Ryan and McLaughlin, using Ryan’s re-voicing relay in place of McLaughlin’s relay, along with McLaughlin’s two-line captioned telephone device.

Patent Owner contends that the claims would not have been obvious over Ryan and McLaughlin because combining Ryan and McLaughlin would require a substantial redesign of McLaughlin and change its principle of operation. PO Resp. 46. We disagree and credit the testimony of Mr. Occhigrosso that such a combination would not be difficult for a person of ordinary skill in the art to implement. *See* Reply 10; Ex. 1057 ¶ 61. Moreover, McLaughlin focuses on a network configuration that uses simultaneous voice and data (SVD) modems in conjunction with a relay, not the details of how a relay translates voice to text during a call between a remote user and an assisted user. *See* Ex. 1009, 30:13–31:63. Thus, we are not persuaded that McLaughlin’s principle of operation is “the use of a

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conventional relay for typed transactions,” as Patent Owner asserts. *See* PO Resp. 46.

Patent Owner also argues that McLaughlin teaches away from the use of trained voice recognition software. *Id.* at 46–47. In particular, Patent Owner submits that McLaughlin acknowledges the shortcomings of automated speech recognition technology and, therefore, would have discouraged one of ordinary skill in the art from attempting to design the relay claimed in the ’578 patent. *Id.* (citing Ex. 1009, 26:54–62). McLaughlin, however, refers to the limitations of speech recognition in the context of translating voice mail messages to text for deaf users, not in connection with relay services discussed in another section of McLaughlin. *See* Ex. 1009, 26:54–62. Moreover, as discussed previously, we credit the testimony of Mr. Occhiogrosso that it was well known in the field of speech recognition at the time of the invention that speaker-dependent speech recognition (e.g., trained to the voice of a particular speaker), such as that used in Ryan’s re-voicing technique, performed better than untrained, speaker-independent speech recognition, such as would be used in the voice mail application described in McLaughlin. *See* Ex. 1030 ¶¶ 22, 61; Ex. 1057 ¶ 62. On the facts presented here, we are not persuaded that McLaughlin’s statement regarding the limitations of speech recognition technology sufficiently teaches away from the combination of Ryan’s re-voicing scheme with McLaughlin’s relay system to establish nonobviousness. *See In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994).

#### *E. Secondary Considerations*

Patent Owner alleges that by “balancing” evidence of obviousness against secondary considerations evidence, we effectively determined the

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claimed invention would have been obvious before considering secondary considerations. Req. 14 (citing Final Dec. 47). We disagree. Rather, in analyzing obviousness based on Wycherley and Yamamoto in our Final Decision, we determined the scope and content of the asserted prior art (Final Dec. 38–39); discussed the claimed subject matter relative to the asserted prior art, which included identifying differences between the claimed subject matter and the prior art in the context of the ordinary level of skill in the art (Final Dec. 39–42); determined Petitioner, with support of its declarant, had articulated sufficient reasoning to support a conclusion of obviousness based on the combined references (Final Dec. 41–44); and analyzed Patent Owner’s secondary considerations of nonobviousness (Final Dec. 44–47). *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Only after that analysis did we address the ultimate conclusion of obviousness of the claimed subject matter by weighing the evidence on both sides:

Accordingly, Patent Owner fails to provide sufficient credible evidence to support its allegations of nonobviousness based on secondary considerations. When we balance Petitioner’s evidence of obviousness against Patent Owner’s asserted objective evidence of nonobviousness, we determine that a preponderance of the evidence supports Petitioner’s position that claim 7 would have been obvious over Wycherley and Yamamoto.

Final Dec. 47. We performed a similar analysis for obviousness based on the combination of Ryan and McLaughlin. *Id.* at 47–54.

Patent Owner further contends we refused to consider Patent Owner’s secondary considerations evidence. Req. 12. This is incorrect. We considered the arguments and evidence presented in Patent Owner’s Response. Final Dec. 45–46. We concluded Patent Owner did “not provide

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sufficient analysis for us to determine whether Patent Owner has provided adequate evidence of secondary considerations and a nexus between any such evidence and the merits of the claimed invention.” *Id.*

In its Request, Patent Owner seems to suggest that we should have reviewed and analyzed the entirety of each of three declarations submitted by Patent Owner in support of its secondary considerations contention (Exs. 2002, 2004, and 2005). Req. 12–13. This also is incorrect because, in its Patent Owner Response, Patent Owner merely cited each declaration in its entirety without citing with particularity portions of these declarations. PO Resp. 45 (citing “declarations by Brenda Battat (Ex. 2004) and Constance Phelps (Ex. 2005)” and “declaration of Paul Ludwick (Ex. 2002)”). We will not scour the 137 pages of declaration evidence submitted by Patent Owner and generally serve as an advocate for Patent Owner by finding evidence of secondary considerations in the voluminous exhibits submitted. *Cf. DeSilva v DiLeonardi*, 181 F.3d 865, 866–67 (7th Cir. 1999) (“A brief must make all arguments accessible to the judges, rather than ask them to play archaeologist with the record.”); *Ernst Haas Studio, Inc. v. Palm Press, Inc.*, 164 F.3d 110, 111–12 (2d Cir. 1999) (“Appellant’s Brief is at best an invitation to the court to scour the record, research any legal theory that comes to mind, and serve generally as an advocate for appellant. We decline the invitation.”).

#### *F. Panel Composition*

Patent Owner requests rehearing before an expanded panel and additionally asserts we exceeded our authority by issuing a Final Written Decision that did not include a judge that was on the panel of administrative patent judges who decided to institute the review. Req. 1, 15. Panel

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composition for an *inter partes* review is specified in 35 U.S.C. § 6(c), which states “[e]ach . . . *inter partes* review shall be heard by at least 3 members of the Patent Trial and Appeal Board, who shall be designated by the Director.” The Director’s authority under 35 U.S.C. § 6 to designate panels has been delegated to the Chief Judge. *See* Patent Trial and Appeal Board Standard Operating Procedure 1 (Rev. 14) (May 8, 2015) (“PTAB SOP 1”).

The Final Decision was decided by three administrative patent judges, who are members of the Board. *See* 35 U.S.C. § 6(a) (indicating that administrative patent judges, along with various members of the United States Patent and Trademark Office, constitute the Patent Trial and Appeal Board). The three administrative patent judges were designated by the Chief Judge according to PTAB SOP 1, titled “Assignment of Judges to Merits Panels, Interlocutory Panels, and Expanded Panels.” The Board, therefore, complied with the statutory requirements for panel composition. Accordingly, we did not issue the Final Decision with less than a “full panel,” as Patent Owner contends. *See* Req. 15.

Moreover, the Chief Judge has discretion to designate judges to decide *inter partes* reviews. *See* PTAB SOP 1 at 2 (§ II.D) (“In general, the Chief Judge will designate a judge or judges, as appropriate, for all matters for AIA reviews.”); *see also AOL Inc. v. Coho Licensing LLC*, Case IPR2014-00771, slip op. at 2 (PTAB Mar. 24, 2015) (Paper 12) (informative) (setting forth that the designation of panel members is within the sole authority of the Chief Judge, as delegated by the Director). Patent Owner’s Request, therefore, does not show the composition of the panel that

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issued the Final Decision was arbitrary, capricious, or an abuse of discretion by the Board.

Patent Owner suggests an expanded panel is warranted to decide the Request in view of the panel composition and various allegations that we misapprehended the law. Req. 1. For the reasons given, Patent Owner does not persuade us that we misapprehended the law or the panel of three judges was deficient. Further, the Board's procedures provide examples of reasons for expanding a panel, none of which apply here. PTAB SOP 1 at 3 (§ III.A). For example, an expanded panel may be appropriate when "serious questions have been raised about the continuing viability of an apparently applicable precedential decision of the Board, or a panel of the Board renders a decision that conflicts with a precedential decision of the Board or an authoritative decision of the Board's reviewing courts." *Id.* Patent Owner's Request does not show a conflict or other reason that weighs in favor of panel expansion. Even so, the panel informed the Chief Judge, who has authority to expand a panel, of Patent Owner's request, and the Chief Judge declined to expand the panel. *See* PTAB SOP 1 at 4 (§ III.C). ("The Chief Judge will determine when an expanded panel is to be designated."); *see also Apple Inc. v. Rensselaer Polytechnic Inst.*, Case IPR2014-00319, slip op. at 2 n.1 (PTAB Dec. 12, 2014) (Paper 20) (indicating only the Chief Judge, acting on behalf of the Director, may act to expand a panel and panels do not authorize panel expansion).

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### III. ORDER

For the reasons given, it is

ORDERED that Petitioner's Request for Rehearing is *granted* for the limited purpose of modifying our analysis regarding the rationale for combining Ryan and McLaughlin as explained herein;

FURTHER ORDERED that Petitioner's Request for Rehearing is *denied* in all other respects; and

FURTHER ORDERED that, as determined in our Final Decision, claims 7–11 of U.S. Patent No. 8,213,578 B2 are unpatentable.



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PETITIONER:

Brian W. Oaks

Bryant C. Boren Jr.

Harper S. Batts

Adam F. Smoot

Joseph Gray

BAKER BOTTS L.L.P.

brian.oaks@bakerbotts.com

bryant.c.boren@bakerbotts.com

harper.batts@bakerbotts.com

adam.smoot@bakerbotts.com

joseph.gray@bakerbotts.com

PATENT OWNER:

Michael Jaskolski

Martha Snyder

Nikia L. Gray

Michael J. Curley

QUARLES & BRADY LLP

michael.jaskolski@quarles.com

martha.snyder@quarles.com

nikia.gray@quarles.com

Michael.curley@quarles.com



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(12) **United States Patent**  
**Engleke et al.**

(10) **Patent No.:** **US 8,213,578 B2**  
(45) **Date of Patent:** **\*Jul. 3, 2012**

(54) **SYSTEM FOR TEXT ASSISTED TELEPHONY**

(75) Inventors: **Robert M. Engleke**, Madison, WI (US);  
**Kevin R. Colwell**, Middleton, WI (US)

(73) Assignee: **Ultratec, Inc.**, Madison, WI (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 933 days.

This patent is subject to a terminal disclaimer.

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379/88.14, 93.15  
See application file for complete search history.

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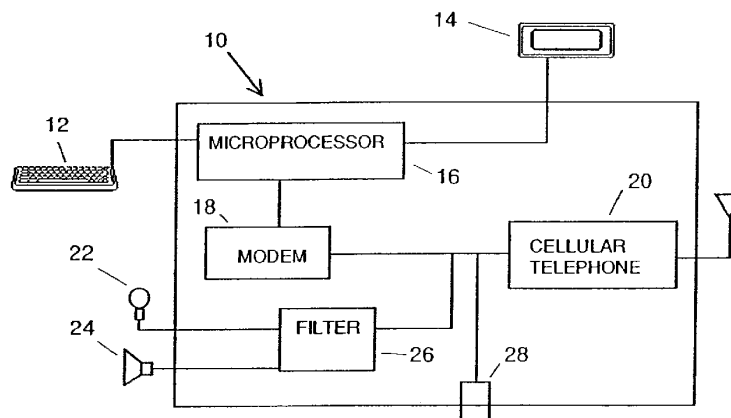
*Primary Examiner* — Stella Woo

(74) *Attorney, Agent, or Firm* — Quarles & Brady LLP

(57) **ABSTRACT**

A method of and system for operating a captioned telephone service, the method comprising the steps of providing words spoken by a remote user to a relay, at the relay, a call assistant listening to the words spoken by the remote user and re-voicing the words into a computer with voice recognition software trained to the voice of the call assistant to create a text stream of the words spoken by the remote user and presenting the text stream to an assisted user via a display.

**11 Claims, 4 Drawing Sheets**



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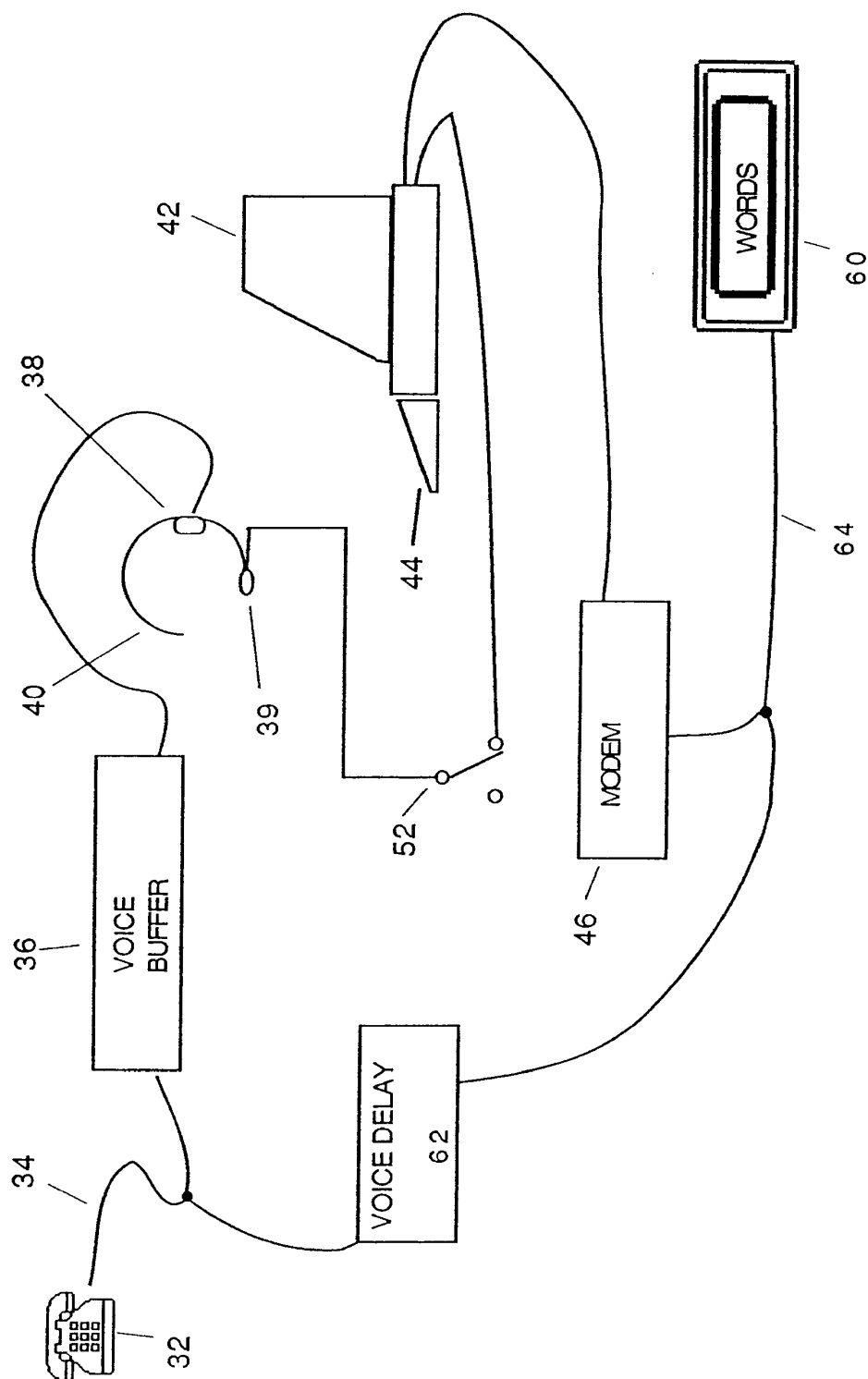


FIG. 1



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FIG. 2

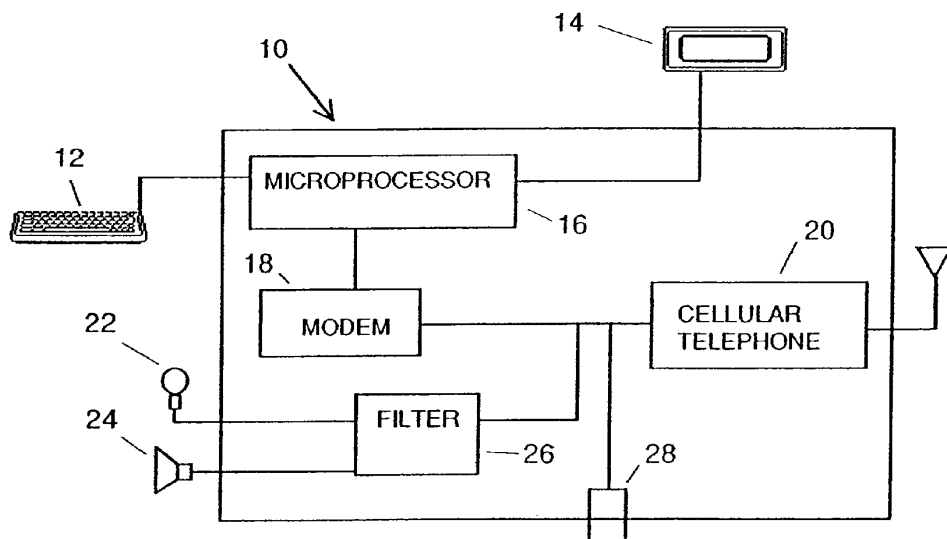


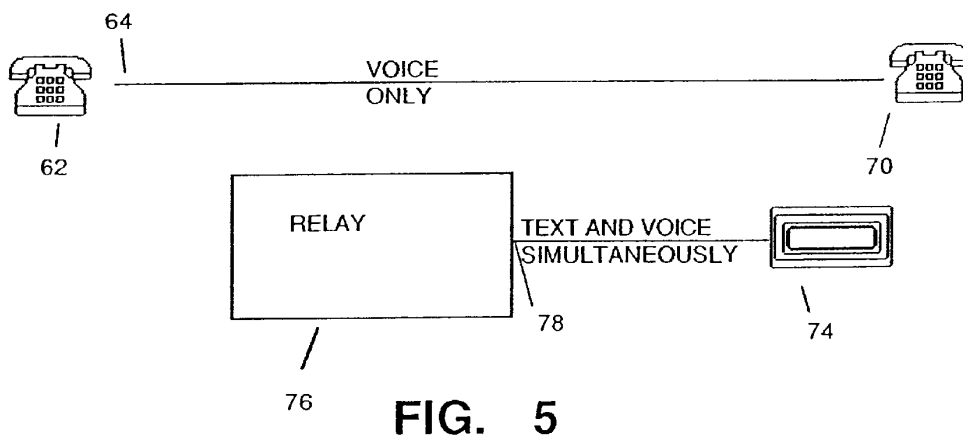
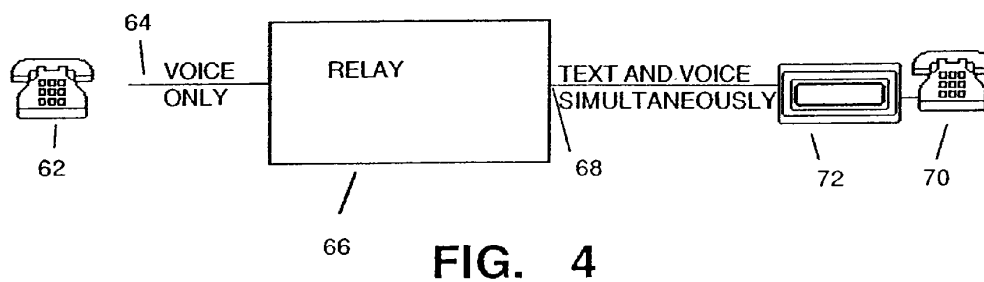
FIG. 3

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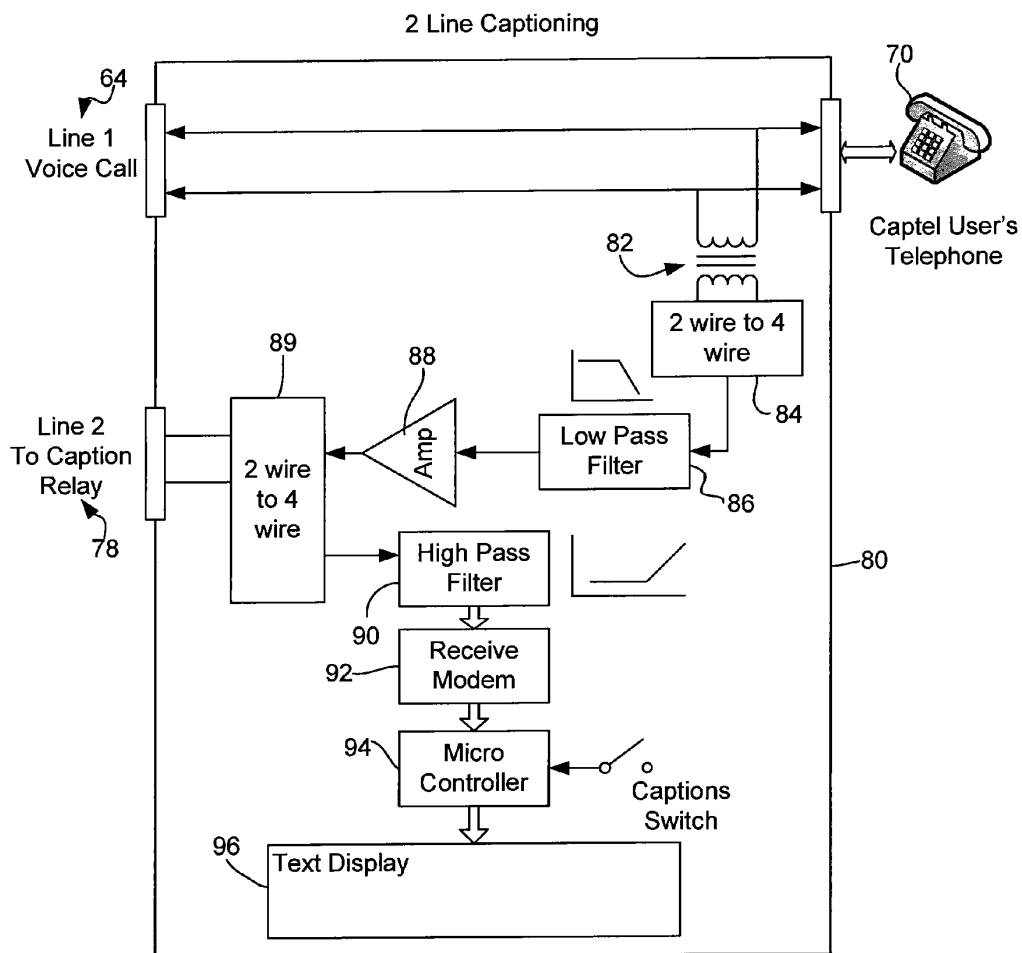


Fig. 6

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**SYSTEM FOR TEXT ASSISTED TELEPHONY****CROSS-REFERENCE TO RELATED APPLICATIONS**

This application is a continuation of application Ser. No. 11/257,703 filed Oct. 25, 2005, which is a continuation of application Ser. No. 10/634,965 filed Aug. 23, 2003, now U.S. Pat. No. 7,003,082, which is a continuation of application Ser. No. 09/938,194 filed on Aug. 23, 2001 now U.S. Pat. No. 6,603,835, which is a continuation-in-part of application Ser. No. 09/783,679, filed Feb. 14, 2001, now U.S. Pat. No. 6,594,346, which is a continuation-in-part of application Ser. No. 09/288,420 filed on Apr. 8, 1999, now U.S. Pat. No. 6,233,314, which is a continuation of application Ser. No. 08/925,558, filed on Sep. 8, 1997, now U.S. Pat. No. 5,909,482.

**STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT**

Not applicable.

**BACKGROUND OF THE INVENTION**

The present invention relates to the general field of telephone communications. In more particular, the invention relates to systems to assist telephone communications by those persons who are deaf, hard of hearing, or otherwise have impaired hearing capability.

Most modern human communications in both social and business environments takes place through sound communications. Yet within modern society there are many persons who have attenuated hearing capability. To assist those persons in making use of our telephonic communication system built for the hearing majority, there has been developed a system of telephone communication which has been principally used by the deaf community. That system makes use of a category of device known variously as a telecommunication device for the deaf (TDD), text telephone (TT) or teletype (TTY). Current TDDs are electronic devices consisting of a key board and a display as well as a specific type of modem, to acoustically or directly couple to the telephone line. Modern TDDs permit the user to type characters into their keyboard, with the character strings then encoded and transmitted over the telephone line to be displayed on the display of a communicating or remote TDD device.

Most TDD communication is conducted in an idiosyncratic code specific to the community of TDD users. This code, known as Baudot, evolved historically at a time when many telecommunication devices for the deaf were based on mechanical or electromechanical devices rather than the current technology based on digital electronic components. Accordingly, the Baudot protocol was constructed for a set of constraints which are no longer relevant to present date devices. The original Baudot protocol was a unidirectional or simplex system of communication conducted at 45.5 Baud. The conventional Baudot character set was a character set consisting of 5 bit characters and the system encodes the bits of those characters in a two-tonal system based on carrier tones of 1400 and 1800 Hertz.

The system of TDD communications is widely used and in fact has become indispensable to the deaf community throughout the industrialized world. Deaf persons extensively communicate with their neighbors and with other deaf and hearing people remotely, using the TDD system. In addition, systems have been developed to facilitate the exchange of communication between the deaf community and hearing

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users who do not have access to or utilize a TDD device. In the United States, telephone companies have set up a service referred to as a "relay." A relay, as the term is used herein, refers to a system of voice to TDD communication in which an operator, referred to as a "call assistant," serves as a human intermediary between a hearing user and a deaf person. Normally the call assistant wears a headset that communicates by voice with the hearing user and also has access to a TDD device which can communicate to the deaf user using a TDD appropriate protocol. In normal relay operations in the prior art, the call assistant types at a TDD keyboard the words which are voiced to her by the hearing user and then voices to the hearing user the words that the call assistant sees upon the display of his or her TDD. The call assistant serves, in essence, as an interpreting intermediary between the deaf person and the hearing person to translate from voice to digital electronic forms of communication.

A system to assist users of the telephone system who are hard of hearing but not deaf has been described. This system, sometimes referred to as text enhanced telephony, makes use of the existence of relays to supplement telephone communications for users who can hear, but have attenuated hearing capabilities. This systems includes, in its simplest embodiment, a visually readable display connected in series between the telephone used by the assisted user and the connection to the telephone network. The text enhanced telephone call is connected through a relay which transmits both the voice of the hearing user at the other end and a text stream of the words spoken by that user on the same telephone line. The details of the concept and of some embodiments of that system are disclosed in U.S. Pat. No. 6,075,842, the disclosure of which is hereby incorporated by reference.

**BRIEF SUMMARY OF THE INVENTION**

The present invention is summarized in that a relay system to facilitate the translation of information and communication between deaf and hearing persons includes a call assistant who re-voices the words of the hearing person which are spoken to the call assistant. The words spoken by the call assistant are recognized by a speech recognition computer program which has been trained to the voice pattern of the call assistant, such that the words are promptly translated into a high speed digital communication protocol. That high speed digital communication message is then transmitted electronically promptly by telephone to a visual display accessible to the deaf person.

It is an advantage of the invention described herein that the call assistant does not have to type most, if any, of the words spoken by the hearing person in the communication session so that the overall speed of communications from the hearing person to the deaf person is dramatically increased.

It is an object of the present invention that the design and utilization of a relay operated in accordance with the protocols described herein permits the introduction of small handheld personal interpreter which will enable on the spot communications between deaf persons and hearing persons wherever the deaf persons might go.

Other objects, advantages and features of the present invention will become apparent from the following specification when taken in conjunction with the accompanying drawings.

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BRIEF DESCRIPTION OF THE SEVERAL  
VIEWS OF THE DRAWINGS

FIG. 1 is a schematic block diagram of a re-voicing relay.  
FIG. 2 is an exterior view of a personal interpreter enabled by the relay of FIG. 1.

FIG. 3 is a schematic block diagram of the personal interpreter of FIG. 2.

FIG. 4 illustrates the operation of a captioned telephone service supported by a relay.

FIG. 5 is a schematic illustration of the concept of the two wire captioned telephone device connection with sound interconnection.

FIG. 6 is a schematic illustration of the connection of a personal interpreter/captioned telephone device connected to two telephone lines.

## DETAILED DESCRIPTION OF THE INVENTION

The present invention is intended to provide an alternative arrangement for the delivery of text assisted telephone services, also called captioned telephone, to a telephone system user with diminished hearing. The present system is intended to take advantage of two developments in the field of assisted telephone services, the personal interpreter and the re-voicing relay. The arrangement for using these capabilities here is designed not to provide text services for the profoundly deaf, but to provide a text assistance service for those who can hear, but who may have diminished hearing. This service is designed to supplement rather than replace the transmission of the spoken voice word to the assisted user. To assist understanding what is contemplated here, the basic technologies of the personal interpreter and the re-voicing relay will be described here first, after which the description will return to the main topic, text assisted telephone services or, as they are also known, captioned telephone services.

The personal interpreter is intended to be a small portable device capable of delivering, with the support of a relay, text to a deaf user of any human conversation occurring in the presence of the personal interpreter. The personal interpreter is set up to connect telephonically to a relay, transmit spoken words to the relay, and then display for the assisted user the text of the words transmitted over the telephone connection to the relay. To make the personal interpreter work more seamlessly to produce more conversation-like communication, a faster relay methodology was needed. To fill this need, the re-voicing relay was designed.

The re-voicing relay is based upon the underlying technology of using voice recognition software, operated by a call assistant (a "CA"), to assist in the voice to text translation inherent in providing relay services. The re-voicing strategy is described in U.S. Pat. No. 5,909,482, the disclosure of which is hereby incorporated by reference. The re-voicing relay has its first implementation in providing voice to text transcription services for the deaf. However, the relay voice to text transcription service has use for users other than those who are deaf. It is envisioned that there are a number of hearing or partially hearing users who would have reason to benefit from voice to text transcription services. Relay voice to text service might also be useful for any application in which it is desired to supplement voice communications by a text transcription of the voice spoken on the telephone. Thus, while the operation of the relay will sometimes be described here by referring to an "assisted user," who may be deaf or hard of hearing, but who also may be a normally hearing person who simply wants text assistance for some reason. The user at the other end of the line will be referred to here as the

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hearing user, simply for the purpose of having something to call that person, even though both users may be hearing.

Personal Interpreter.

Shown in FIG. 2 is an illustration of what a personal interpreter 10 can look like. This would be a small hand held device typically the size of a small hardbound book. It would have a keyboard of minimal size, but useable by a deaf person who can type. It would have a two or four line display, but the display could be any size that conveniently fits in the case of the device. The device would also have a key or switch which would initiate its operation.

Shown in FIG. 3 is a schematic block diagram of the internal mechanics of the personal interpreter. The personal interpreter keyboard shown at 12 and its display as shown at 14. Inside the interpreter itself is a microprocessor shown at 16. Not shown, but included within the personal interpreter, would be the appropriate memory and interface devices so as to allow the microprocessor to be programmed and to operate the personal interpreter and perform its functions, in a manner well known in the art. Also inside of the personal interpreter is a modem 18. The modem 18 is preferably a modem specifically designed for interface with the deaf telecommunications system. Most telecommunications with the deaf community are conducted using a Baudot type code. One useful alternative is for the modem be designed to use the enhanced form of Baudot communication known as "Turbo Code" (Ultratec), which is generally described in U.S. Pat. Nos. 5,432, 837, 5,517,548, and 5,327,479, the disclosure of which is hereby incorporated by reference. Another alternative is that the modem use a new variant of Turbo Code, one which uses higher carrier frequencies (in the range of 3000-3500 hertz) and a faster baud rate (over 100 baud). The most preferred alternative is for the modem to use a digital communication protocol which can both transmit and receive digital packets which contain either or both of voice and text. The output of the modem is preferably wired to a cellular telephone 20 included within the case of the personal interpreter 10. The cellular telephone 20 has a suitable antenna provided on it so that it may dial a cellular telephone network by radio frequency communications of the type normally conducted by cellular telephones. The personal interpreter also includes jack 28 to connect to a conventional wired or land-line telephone line as well. The personal interpreter also includes a microphone 22 and a speaker 24. A filter 26 connects the speaker 24 and the microphone 22 to the telephone 20.

A brief description of the operation and functionality of the personal interpreter reveals the dramatic improvement and convenience and portability that this device gives to text assisted people. A assisted user could go into an establishment, be it a government office or retail facility, in which there are only hearing persons. The assisted person would carry with him or her the personal interpreter 10. The assisted user would then place the personal interpreter 10 upon a counter or other surface, open it up, and press the initiation key or start button. The microprocessor 16 and modem 18 of the personal interpreter then power up and act in many ways like a normal TDD device operating in telecommunication standard, such as Turbo code. However, there is one critical difference. The start or initiation key further causes the microprocessor 16 of the personal interpreter to dial a relay to set up a relay communication session and includes in its communication with the relay a message, using the enhanced command features available in advanced telecommunication protocols, such as Turbo Code, to initiate a special format of relay call adapted for the personal interpreter. Other codes which permit command functions, such as ASCII or CCITT, could also be used. The first operation is to activate the cellular telephone and

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direct the cellular telephone to dial the number of a relay operating in accordance with the method of the present invention. The cellular telephone dials the relay. Obviously, no wired connection is required to allow the cellular telephone function to establish a telephone connection with the remote relay, but alternatively the jack 28 to a conventional telephone line could be used. In addition, when the relay answers the telephone connection, the microprocessor 16 of the personal interpreter 10 is instructed to provide command codes to the remote relay. These command codes, a feature possible through the use of Turbo Code, permits the personal interpreter to tell the relay that this is a personal interpreter-type relay communication session. All of this can happen in the time necessary to initiate the cellular call, perhaps two to ten seconds.

Then, the assisted person can use the personal interpreter to translate words spoken by hearing persons in the presence of the personal interpreter into visually readable text. This is done by the personal interpreter 10 through an unseen relay. Words spoken by the hearing persons in the presence of the personal interpreter 10 are picked up by the microphone 22. Those words are then transmitted through the cellular telephone 20 to the remote relay. The relay, operating as will be described below, then immediately transmits back, in enhanced Turbo Code, a digital communication stream translating the words that were just spoken. The words are received by the modem 18, and the microprocessor 16 in the personal interpreter 10, and it is displayed promptly upon the display screen 14. If the assisted person can speak, he or she may then answer the hearing person with a spoken voice, or, the assisted person may alternatively type upon the keyboard 12. If the assisted user types on the keyboard 12, the personal interpreter transmits the communication by digital communication to the relay. The call assistant at the relay then reads and speaks the words typed by the assisted user which are transmitted to the speaker 22 contained in the personal interpreter into a voice communication which can be understood by the hearing users. The filter 26 filters out the digital communication frequencies from the sound generated by the speaker 22. Thus, in essence, the assisted person has a personal interpreter available to him or her at all times of the day or night wherever the assisted person is within the range of the cellular telephone system. Also, because the relay is preferably operating in accordance with the fast translation methodology described below, a very conversation-like feel can occur in the communication session between the assisted user and the hearing persons in the presence of the personal interpreter 10. In order for this communication session to be satisfactory to the hearing users as well as the assisted person, however, the relay must operate exceedingly rapidly. It is, in part, to meet the need for the exceeding rapidity of this conversational style of communication that the re-voicing relay protocol has been designed.

#### Re-Voicing Relay.

Shown in FIG. 1 is a relay intended to provide the voice to text capability to support the personal interpreter, and which can also support other voice to text services to provide services for assisted users. FIG. 1 is intended to show, in schematic fashion, how such a relay system can be set up. Shown at 32 is a telephone of a hearing person. Instead of a telephone of a hearing person, the input could also be the microphone of the personal interpreter 10 shown in FIGS. 2 and 3. The telephone of the hearing person 32 is connected through a telephone line 34 to a voice input buffer 36 at the relay. The telephone line 34 can be an actual physical land line, or two pair between the telephones, or can be a cellular or other over-the-air telephone linkage. The voice input buffer 36 is a

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simple buffer to ensure temporary capture of the voice in the event that the call assistant gets behind and needs to buffer or delay the voice of the hearing person. In any event, the output of the input voice buffer 36 is provided to a headset 40 where earphones 38 produce the sound of the remote speaking person in the ear of the call assistant. The call assistant is wearing the headset 40 and sitting at a computer 42 capable of communicating in an enhanced Baudot communication, such as Turbo Code or whatever other code protocol is being used. However, typically the call assistant does not type the words which the call assistant hears in his or her earphone 38. Instead, the call assistant then speaks the words which he or she hears in the earphones 38 into a microphone 39 in the headset 40. The microphone 39 on the headset 40 is connected to transmit the voice of the call assistant to the computer 42 at which the call assistant sits.

#### Captioned Telephone.

As mentioned earlier, captioned telephone is a technology intended to provide text assistance to assisted user during the course of a voice telephone communication session. As will become apparent from the discussion below, a captioned telephone connection can be a single line connection or a multiple line connection. There are advantages and disadvantages of each approach. A single line connection is known in the art, as exemplified by U.S. Pat. No. 6,075,842, mentioned previously. The advantages and details of the use of a multiple line connection are described below. The discussion of captioned telephone will begin with a single line connection.

Shown in FIG. 4 is an illustration of how a typical telephone call involving a single line captioned telephone would be set up. The hearing user at telephone 62 communicates through a telephone line 64 with the relay, indicated at 66. The relay, a re-voicing relay, communicates through a telephone line 68 with the assisted user. At the site of the assisted user is a telephone 70 used by the assisted user and also a captioned telephone device 72. The telephone 70 is conventional. The captioned telephone device 72 is constructed to accomplish two objectives. One objective is to filter, or separate, the digital signals carrying the text information from the voice signal. The other objective is to take the digital signals and create a visual display of the text information for the assisted user. This device is thus intended to assist the user to understand a greater portion of the conversation by providing a visually readable transcription of the text of the telephone conversation so that the assisted user can read any words that he or she cannot hear properly. While the captioned telephone device 72 of FIG. 4 is illustrated as a separate stand-alone device from the telephone 70, those of skill in the art can readily appreciate that the two functions can be combined in a special capability telephone station. Such a special purpose station can both provide conventional telephone service and also include a display which can be used to provide captioning for an assisted user.

The two line captioned telephone is indicated in FIG. 5. In its simplest embodiment, the two-line captioned telephone can be conceptually thought of as a personal interpreter used to provide text assistance to a telephone user. Thus in FIG. 5, the telephone of the hearing user 62 and the telephone of the assisted user 70 are connected directly by a simple single telephone connection, indicated by the telephone line 64. The assisted user then uses a personal interpreter/captioned telephone ("PCT") device 74 to connect to a relay 76 over a second telephone line or connection, indicated at 78. There must be some form of communication between the telephone of the assisted user 70 and the PCT device 74, so that the voice of the hearing user can be transferred to the second telephone line 78 to the relay 76. At its simplest, the connec-



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tion can be a simple acoustic connection, such as placing the sound pick-up microphone of the PICT device in such a location that the sound of the hearing person's voice is picked up and transmitted to the relay. A microphone connected to the PICT device **74** could be placed on the handset of the assisted user's telephone **70**. However, it is preferred that the PICT device be electronically connected to the telephone of the assisted user so that the voice of the hearing user can be transmitted to the relay call assistant with minimal interference or noise. The PICT device includes a visually readable display and suitable decoding electronics and software so that the device can receive and display a text stream received from the relay over the second telephone line.

The main advantage of the two-line approach to captioned telephone is that the captioned telephone service can be added to a telephone call already in progress. By contrast, to use single line captioned telephone for an incoming call, the call must be directed through the relay to the assisted user at the beginning of the call. For a two-line captioned telephone call, however, the call can be started as a normal telephone communication session, without the relay or the captioning. Then, if the assisted user decides captioning would be helpful to his or her understanding of the conversation, the captioning service can be added while the call is in progress. To add the captioning service, the assisted user simply has the PICT device dial the relay over the second telephone line. The voice of the hearing user is then transmitted over the second telephone line to the relay. The relay converts the voice to text and the text stream created by the relay returns to the assisted user, also over the second telephone line. Note that in this arrangement, as indicated in FIG. 5, voice and text are transmitted in opposite directions over a single telephone line between the PICT device and the relay, voice going to the relay and text returning on the same line. This arrangement of voice and text is the same as used for the personal interpreter.

One device intended to implement the two-line captioned telephone approach is illustrated in FIG. 6. The PICT device **80** of FIG. 6 is an analog device connected in series between the telephone line **64** to the hearing user and the telephone **70** of the assisted user. As seen in FIG. 6, the telephone line **64** is connected directly through the PICT device **80** to the telephone **70**. However, that telephone connection is also connected through a transformer **82** to a 2-wire to 4-wire converter **84**. Connected to the output of the converter **84** is a low pass filter **86**, the output of which is the input to an amplifier **88**. The output of the amplifier **88** is connected to a 2-wire to 4-wire converter **89** which connects, in turn, to the telephone line **78** which connects to the relay (not shown here). The input signals from the telephone line **78** are connected to a hi-pass filter **90**, the output of which passes through a receive modem **92** to a microcontroller **94**. The microcontroller operates the display **96**. The microcontroller also includes the capability to generate DTMF dialing tones and impress those tones on the telephone line **78** when it is time to dial the relay. Thus here the single PICT device **80** connects to two telephone lines. A call can be initiated or received by the assisted user in the same manner as with a conventional telephone, using only the first telephone line **64**. When the user wishes to invoke the captioning service, the assisted user presses a button, **97**, on the PICT device **80** that causes the device to automatically dial the relay on the second telephone line **78**. The PICT device automatically transmits the voice signals on the first telephone line to the second telephone line (through the low-pass filter **86**) for transmission to the relay. At the relay, the voice is converted into text and a text stream is sent back down the telephone connection **78** to the PICT device. The PICT device filters the text data, at the hi-pass filter **90**,

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and transmits it to the microcontroller **94** for display to the user. None of the text data, and no digital carrier signals, are heard by either the hearing user or the assisted user. Normally the hearing user does not even need to be aware that captioning is being used on the call.

This example assumes that the digital carrier signals for the text message are carried on high frequencies, and the low pass and high pass filters are used to separate voice from text. While this filtering can be implemented as an analog filter, in many telephonic systems today, digital forms of communication are used. Using a digital communication protocol between the relay and the PICT device, communication is in the form of digital data packets of either text or digitized voice. In that event, the logical filtering simply consists of not creating any acoustic noise from the packets designated as carrying text.

Several physical versions of the PICT device are contemplated. In the version illustrated in FIG. 5, the PICT device is a stand-alone appliance inserted in series between the telephone of the assisted user and the telephone jack on the wall of the user's home. It may also be convenient for the user to package the PICT device as a single two-line unit intended to provide both conventional telephone service, as well as captioned telephone services. The device could look like a normal telephone, but have a display. The captioned telephone feature would be activated by a button or key, which would cause the unit to dial a pre-selected relay and set up a captioning session, whether or not a call on the other line is yet in progress. The voice signals incoming on the first telephone line from the hearing user would be transferred electronically to the telephone line to the relay. Text signals would be transmitted on that same telephone line back from the relay to the PICT device, which would display that text for the assisted user. Since the re-voicing relay operates with only a very slight time delay, the text display for the assisted user would trail the hearing person's voice slightly, but the text would still assist the user in comprehending the conversation.

It is a desirable feature of the two-line captioned telephone arrangement that the use of the captioning service is transparent to the hearing user. The hearing user would dial to connect to the assisted user as with any other telephone user. The assisted user invokes the captioned telephone service without the need to involve the hearing user at all. The service can be used equally well and transparently for both incoming and outgoing calls.

It is also envisioned that the captioned telephone service can be implemented in a way that uses three telephone lines. One line is for voice communications with the hearing user. The second line is directly connected to the first line so that the voice of the hearing user is transmitted to the relay. The third line is a connection to transmit the text stream from the relay to the station of the assisted user.

In the implementation of a relay providing captioned telephone service, the relay receives the voice of the hearing user and transmits both a digital text message stream and the voice of the hearing user over a telephone connection to the station of the assisted user. It is to be understood, however, that a conventional telephone single line connection is only one example of a telephonic connection that can be used in this arrangement. Digital wireless connection, or PCS connection, or even internet protocol (IP), wired or wireless connection can be used to connect the relay to the assisted user, so long as the connection is capable of transmitting voice to that user.

Thus the term telephone line as used in this specification is intended not only to apply to a traditional land-line two-wire telephone line, but also to all equivalents that offer similar

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functionality. Each of the telephone lines could be, for example, a portion of the bandwidth of an ISDN or DSL service. The telephone line could be an analog or digital cellular telephone link or a PCS connection. The PICT device could also be connected to the internet communication in IP, and in that event the two telephone lines would simply be simultaneous digital data exchange with two remote locations.

It is to be understood that the present invention is not limited to the particular illustrations and embodiments disclosed above, but embraces all such modified forms thereof as come within the scope of the following claims.

We claim:

1. A system for providing captioned telephone service to an assisted user, the system comprising:
  - a captioned telephone device at the site of the assisted user, the captioned telephone device including a microphone, a visually readable display, and a microprocessor;
  - a relay for converting voice to text, the relay including a computer with voice recognition software and operated by a call assistant, the voice recognition software of the relay trained to the voice of the call assistant to create a text stream of the words spoken by a hearing user, the text stream being transmitted to the captioned telephone device;
  - the microprocessor programmed to operate the device to receive the voice of the hearing user via the microphone, transmit the received voice to the relay, receive the text stream transmitted by the relay, and present the text stream via the display for viewing by the assisted user.
2. The system of claim 1 wherein the captioned telephone device further includes an input device to enable the assisted user to enter text and a speaker, the microprocessor further programmed to transmit the text entered by the assisted user to the relay, the relay also for converting the text received from the captioned telephone device into an audible message and transmitting the audible message to the captioned telephone device, the microprocessor further programmed to generate the audible message via the speaker.

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3. The system of claim 2 wherein the relay includes a speaker and a microphone linked to the computer, the speaker for presenting the voice of the hearing user to the call assistant at the relay, the call assistant speaking in voice the same words that the call assistant hears spoken by the hearing user into the microphone.

4. The system of claim 1 wherein the captioned telephone device is a cellular device.

5. The system of claim 1 wherein the captioned telephone device communicates with the relay via a wireless data connection using an IP.

6. The system of claim 1 wherein the captioned telephone device communicates with the relay via a cellular connection using an IP.

7. A method of operating a captioned telephone service, the method comprising the steps of:

providing words spoken by a remote user to a relay;

at the relay, a call assistant listening to the words spoken by the remote user and re-voicing the words into a computer with voice recognition software trained to the voice of the call assistant to create a text stream of the words spoken by the remote user; and

presenting the text stream to an assisted user via a display.

8. The method of claim 7 wherein the step of providing words spoken by a remote user to a relay includes the steps of receiving the words spoken at a captioned telephone device and transmitting the words spoken from the captioned telephone device to the relay via one of a cellular connection and a wireless data connection.

9. The method of claim 8 wherein the step of presenting the text stream to an assisted user via a display includes the steps of transmitting the text stream from the relay to the captioned telephone device via the one of the cellular connection and the wireless data connection.

10. The method of claim 8 wherein the words spoken are transmitted to the relay via an IP.

11. The method of claim 7 wherein the step of providing words spoken by a remote user to a relay includes the transmitting the words spoken to the relay via an IP.

\* \* \* \* \*



[Trials@uspto.gov](mailto:Trials@uspto.gov)  
571-272-7822

Paper 65  
Entered: March 3, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CAPTIONCALL, L.L.C.,  
Petitioner,

v.

ULTRATEC, INC.,  
Patent Owner.

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Case IPR2013-00545  
Patent 6,594,346 B2

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Before WILLIAM V. SAINDON, BARBARA A. BENOIT, and  
LYNNE E. PETTIGREW, *Administrative Patent Judges*.

BENOIT, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

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Patent 6,594,346 B2

## I. INTRODUCTION

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6(c). This final written decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1 and 2 of U.S. Patent No. 6,594,346 B2 (Ex. 1001; “the ’346 patent”) are unpatentable.

### A. Procedural History

CaptionCall, L.L.C. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1 and 2 of the ’346 patent pursuant to 35 U.S.C. §§ 311-319. Paper 1 (“Pet.”). Patent Owner, Ultratec, Inc., did not file a preliminary response. On March 5, 2014, pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review for claims 1 and 2 of the ’346 patent as unpatentable under 35 U.S.C. § 103(a) for obviousness over Ryan<sup>1</sup> and Alshawi.<sup>2</sup> Paper 6 (“Inst. Dec.”).

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 19; “PO Resp.”), and Petitioner filed a Reply (Paper 32; “Reply”). Patent Owner also filed a Motion to Exclude Evidence. Paper 41 (“PO Mot. to Exc. Occhiogrosso”). Petitioner filed an Opposition (Paper 55; “Pet. Opp. to Mot. to Exc.”) to Patent Owner’s Motion, and Patent Owner filed a Reply to Petitioner’s Opposition (Paper 48; “PO Reply to Opp. to Mot. to Exc.”).

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<sup>1</sup> U.S. Patent No. 5,809,112 (Ex. 1004) (“Ryan”).

<sup>2</sup> U.S. Patent No. 5,815,196 (Ex. 1010) (“Alshawi”).

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An oral hearing was held on November 19, 2014.<sup>3</sup>

*B. Related Proceedings*

Petitioner represents that the '346 patent was asserted against its parent company in *Ultratec, Inc. v. Sorenson Communications, Inc.*, No. 13-CV-00346 (W.D. Wis.). Pet. 2. Petitioner also represents that the lawsuit included other patents related to the '346 patent and for which Petitioner also requested *inter partes* review— U.S. Patent No. 6,233,314 B1 (Case IPR2013-00540), U.S. Patent No. 5,909,482 (Case IPR2013-00541), U.S. Patent No. 7,319,740 (Case IPR2013-00542), U.S. Patent No. 7,555,104 (Case IPR2013-00543), U.S. Patent No. 8,213,578 (Case IPR2013-00544), U.S. Patent No. 6,603,835 (Case IPR2013-00549), and U.S. Patent No. 7,003,082 (Case IPR2013-00550).

*C. The '346 Patent*

The '346 patent describes a computer-assisted relay system to provide text translation of telephone conversation to assist a person who has hearing difficulties (referred to as an “assisted user”). Ex. 1001, 3:20-21, 35-40. A human intermediary (referred to as a “call assistant”) facilitates a telephone conversation between a hearing user and an assisted user by communicating by voice with the hearing user and repeating the hearing user’s words to a computer provided with voice recognition software trained to the voice of

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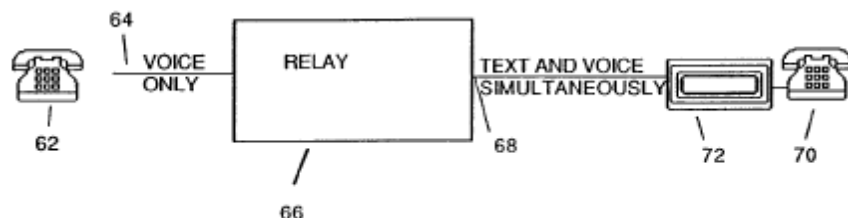
<sup>3</sup> This proceeding, as well as IPR2013-00540, IPR2013-00541, IPR2013-00542, IPR2013-00543, IPR2013-00544, IPR2013-00549, and IPR2013-00550 involve the same parties and some similar issues. The oral arguments for all eight reviews were merged and conducted at the same time. A transcript of the oral hearing is included in the record as Paper 64.

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the call assistant. *See id.* at 1:62-2:11; 3:20-28, 35-39; 6:13-36. The computer of the call assistant sends the text transcription created by the voice recognition software to a display located adjacent to the assisted user. *See id.* at 6:13-44.

Figure 4 of the '346 patent shows a captioned telephone service supported by a relay. *See id.* at 3:15-16; 8:63-65. Figure 4 of the '346 patent is set forth below:



**FIG. 4**

Figure 4 illustrates a telephone call involving a captioned telephone.

As shown in Figure 4, a hearing user at telephone 62 communicates through telephone line 64 with relay 66. *See id.* at 8:63-66. The relay communicates both the voice of the hearing user and a transcription of the text of the conversation through telephone line 68 to captioned telephone device 72 and conventional telephone 70, both at the site of the assisted user. *See id.* at 8:66-9:7. The captioned telephone assists “the user to understand a greater portion of the conversation by providing a visually readable transcription of the text of the telephone conversation so that the assisted user can read any words that he or she cannot hear properly.” *Id.* at 9:9-13.

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*D. Claims of the '346 Patent*

Petitioner challenges both claims of the '346 patent. Claims 1 and 2 are independent claims.

1. A method of operating a relay system using a call assistant to facilitate communication between a hearing user and an assisted user by telephone, the hearing user speaking words in voice, the method comprising the steps of
  - transmitting the voice of the hearing user when speaking to the ear of the call assistant;
  - the call assistant speaking in voice the same words that the call assistant hears spoken by the hearing user into a microphone connected to a digital computer;
  - the digital computer using voice recognition computer software trained to the voice of the call assistant to translate the words of the voice spoken by the call assistant into a digital text message stream containing the words spoken by the call assistant;
  - transmitting both the digital text message stream and the voice of the hearing user by telephone connection to the assisted user;
  - displaying the digital text message stream to a captioned telephone display device within sight of the assisted person; and
  - transmitting the voice of the hearing user to the assisted user.
2. A relay to facilitate communications between [a] hearing user, speaking words in voice, and an assisted user, the relay operated by a call assistant, the relay comprising
  - a speaker connected to receive the voice from the hearing user and to transmit that voice to the ear of the call assistant so that the call assistant may voice those words;
  - a microphone connected to pick up the voice of the call assistant;
  - a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package to translate the words spoken by the call

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assistant into a digital text stream; and  
a telephonic connection to transmit both the digital text stream and the voice of the hearing user over a telephonic connection to the assisted user.

*Id.* at 10:2-42.

## II. ANALYSIS

### *A. Claim Construction*

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, No. 2014-1301, slip op. at 11–19 (Fed. Cir. Feb. 4, 2015). Under the broadest reasonable construction standard, claim terms are presumed to be given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An inventor may provide a meaning for a term that is different from its ordinary meaning by defining the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

We construe the claim language below in accordance with these principles. No other terms require express construction.

#### *1. “software trained to the voice of the call assistant”*

Independent claim 1 recites “software trained to the voice of the call assistant,” whereas independent claim 2 does not. Patent Owner incorrectly asserts that, under our preliminary constructions of “voice recognition

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computer software” and “voice recognition computer software package,” independent claim 2 also requires “software trained to the voice of the call assistant.” PO Resp. 12-13. As Petitioner recognizes (Reply 2), we did not import the limitation “trained to the voice of the call assistant” into claim 2. Rather, we expressly construed the recited software as “a separately compilable software component for voice recognition that is ready to be used on a computer.” Inst. Dec. 11-12 (“[W]e construe ‘voice recognition computer software package’ as ‘a separately compilable software component for voice recognition that is ready to be used on a computer.’ . . . [W]e also construe ‘voice recognition computer software’ as ‘a separately compilable software component for voice recognition that is ready to be used on a computer.’”).

In the parties’ dispute over the teachings of the asserted prior art, they articulate different views in how the term “software trained to the voice of the call assistant” should be construed. Patent Owner construes “trained to the voice of the call assistant” to require training to recognize individual voices (PO Resp. 23-24), presumably trained to the voice of one and only one call assistant and precluding training for a type of speech used by a group of people (such as a regional accent) that could apply to more than one call assistant. Patent Owner also seeks to construe “trained to the voice of the call assistant” as having a temporal constraint so as to preclude training at the time when the voice recognition computer software package is “*designed* in advance of implementation at the source code level.” PO Resp. 21. According to Patent Owner, “trained to the voice of the call

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assistant” precludes software that is “built to” recognize the voice of a particular agent. PO Resp. 22. Petitioner disagrees. Reply 4-5.

The Specification of the ’346 patent does not set forth a special definition for “training.” The Specification, however, in its “Brief Summary of the Invention” indicates “a speech recognition computer program which has been trained to the voice *pattern* of the call assistant.” Ex. 1001, 2:51-54 (emphasis added). In the context of describing the relay shown in Figure 1, the Specification describes “the call assistant operat[ing] at a computer terminal which contains a copy of a voice recognition software package which is specifically trained to the voice of that *particular* call assistant.” *Id.* at 6:21-24 (emphasis added). The Specification, however, does not indicate expressly that the voice recognition software is trained to the voice of only that particular call assistant or otherwise indicate the voice recognition software is trained to the voice of only one call assistant. As such, the Specification contemplates software trained to “a voice pattern of the call assistant” as well as software “specifically trained to the voice of [a] *particular* call assistant.”

Further, the Specification indicates, in those passages, that the voice recognition software package is trained but does not indicate when or how the training occurs. *Id.* at 2:51-54, 6:21-24. Patent Owner, relying on its declarant Mr. Ludwick, asserts software “designed” is not software that is “trained to recognize individual voices.” PO Resp. 21 (citing Ex. 2001 ¶¶ 19-20). According to Mr. Ludwick, a person of ordinary skill in the art would not have understood “trained” software to include “designed” software because speech recognition technology was not used in



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telecommunications relay service in 1994. Ex. 2001 ¶¶ 19-20. The use of speech recognition technology in 1994 has little probative value here because the date of invention is February 14, 2001 for the reasons discussed below.

We give claim language its broadest reasonable construction in light of the specification of the patent in which it appears. Thus, we will not limit “trained to the voice of the call assistant” to require training to the voice of only one particular call assistant, because the claim language encompasses the invention as disclosed in the Specification—software trained to a voice *pattern* of a call assistant. Ex. 1001, 2:41-49 (“Summary of the Invention”). Nor will we limit “trained to the voice of the call assistant” to a particular time in which the training must occur or to a particular manner of training that is not found in the claims nor the specification.

Accordingly, “trained to the voice of the call assistant” does not preclude voice recognition software that is designed or built in advance of implementation at the source code level to the voice pattern of a call assistant. Nor is “trained to the voice of the call assistant” limited to training to the voice of one and only one call assistant.

## 2. “captioned telephone display device”

Independent claim 1 recites “displaying the digital text message stream to a *captioned telephone display device* within sight of the assisted user.” Ex. 1001, 10:21-23 (emphasis added). The ordinary meaning of “telephone” is “[a]n instrument that converts voice and other sound signals into a form that can be transmitted to remote locations and that receives and

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reconverts waves into sound signals.”<sup>4</sup> In the context of voice communication, a “caption” is text that communicates dialogue.<sup>5</sup> Thus, according to its ordinary meaning, a captioned telephone display device is a device that transmits and receives voice signals, and displays text.

The ’346 patent, however, uses a similar term “captioned telephone device” in a way that is consistent with the ordinary meaning of captioned telephone display device. Claim 1 recites “transmitting . . . the digital text message stream . . . by telephone connection to the assisted user” and “displaying the digital text message stream to a captioned telephone display device within sight of the assisted person.” Thus, claim 1 requires the digital text message stream, which is transmitted by telephone connection to the assisted user, to be received by the captioned telephone display device before the captioned telephone display device can display the digital text message stream.

Other than in claim 1, the ’346 patent does not use the precise term “captioned telephone *display* device.” The written description of the ’346 patent describes a captioned telephone device as a device that receives both voice signals and text information, and displays the text information to an

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<sup>4</sup> THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 1846 (3d ed. 1992); THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 1779 (4th ed. 2006).

<sup>5</sup> THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 286 (3d ed. 1992) (defining “caption” in relevant part as “2. A subtitle in a motion picture.”); THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 278 (4th ed. 2006) (defining “caption” in relevant part as “2. A series of words . . . that communicate dialogue to the hearing-impaired or translate foreign dialogues.”).

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assisted user. *Id.* at 9:3-9 (“The captioned telephone device 72 is constructed to accomplish two objectives. One objective is to filter, or separate, the digital signals carrying the text information from the voice signal. The other objective is to take the digital signals and create a visual display of the text information for the assisted user.”); *see also id.* at Fig. 4 (showing a simultaneous text and voice connection between captioned telephone device 72 and relay 66). Note that a captioned telephone device need not output any audio signals to the assisted user. *See id.* at 9:1-3 (describing a captioned telephone device and telephone at an assisted user’s location as two separate devices), Fig. 4 (illustrating captioned telephone device 72 and telephone 70 as two separate devices).

In light of the use of “captioned telephone display device” in claim 1, the use of “captioned telephone device” in the written description of the ’346 patent, and the ordinary meaning of the term, we construe “captioned telephone display device” as a device that transmits and receives voice signals, receives text information, and displays text to an assisted user.

### *B. Principles of Law*

To prevail in challenging claims 1 and 2 of the ’346 patent, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

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*KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). The level of ordinary skill in the art is reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

### *C. Effective Filing Date of Claims 1 and 2*

The '346 patent was filed on February 14, 2001 and claims the benefit of earlier filing dates of applications that issued as the '314 and '482 patents. The '346 patent includes disclosure that is not included in the '314 and '482 patents, which share a common disclosure. For example, the '346 patent describes transmitting both text and voice over a telephone line. *See* Ex. 1001, 3:35-40, 8:61-9:39, Fig. 4. The references asserted here, Ryan and Alshaw, predate the earliest filing date claimed by the '346 patent, but obviousness is determined as of the time of the invention. *See* 35 U.S.C. § 103(a) (“A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious *at the time the invention was made* to a person having ordinary skill in the art to which said subject matter pertains.”) (emphasis added). Patent Owner asserts that the subject matter of the claimed invention would not have been obvious to one of skill

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in the art in 1994 and 1995, and so seems to assert an effective filing date for the '346 patent earlier than its filing date, February 14, 2001. Accordingly, we now determine the effective filing date of the subject matter of independent claims 1 and 2. *Cf.* PO Resp. 32-35 (asserting that Ryan must be read narrowly in view of the state of the relevant art in 1994); *id.* at 18 (“Patent Owner does not concede that claims 1 and 2 of the '346 Patent are not entitled” to an earlier effective filing date).

For a claim in a later-filed application to be entitled to an earlier filing date, the earlier application must satisfy the written description requirement of 35 U.S.C. § 112, first paragraph. *See* 35 U.S.C. § 120; *In re Huston*, 308 F.3d 1267, 1276 (Fed. Cir. 2002). “[T]he purpose of the written description requirement is to ‘ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor's contribution to the field of art as described in the patent specification.’” *Ariad Pharms., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1353-54 (Fed. Cir. 2010) (en banc) (quoting *Univ. of Rochester v. G.D. Searle & Co.*, 358 F.3d 916, 920 (Fed. Cir. 2004)). The written description requirement is met if the specification shows that the inventor has invented what is claimed—that is, the inventor had possession of it. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991).

Independent claim 1 recites “transmitting both the digital text message stream and the voice of the hearing user by telephone connection to the assisted user,” and independent claim 2 recites “a telephonic connection to transmit both the digital text stream and the voice of the hearing user over a telephonic connection to the assisted user.” The earlier applications, which

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issued as the '482 and '314 patents, do not disclose transmitting both text and voice over a telephone line, as claimed in independent claims 1 and 2 of the '346 patent. As such, the earlier applications do not meet the written description requirement for claims 1 and 2. Therefore, independent claims 1 and 2 only are entitled to a priority date of February 14, 2001, the filing date of the application that issued as the '346 patent.

*D. Patent Owner's Motion to Exclude Testimony by Mr. Occhiogrosso*

Patent Owner seeks to exclude the testimony of Mr. Benedict Occhiogrosso (Exs. 1019, 1037, 2006, 2007, and 2012) on the theory that he is not qualified as an expert under Federal Rule of Evidence 702 ("FRE 702").<sup>6,7</sup> PO Mot. to Exc. Occhiogrosso; PO Resp. 4-8. FRE 702 provides that a witness qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion if (a) the expert's knowledge will help the trier of fact to understand the evidence or to determine a fact in issue, (b) the testimony is based upon sufficient facts or data, (c) the testimony is the product of reliable principles

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<sup>6</sup> Patent Owner also seeks to *exclude* Mr. Occhiogrosso's testimony under 37 C.F.R. § 42.65. PO Mot. to Exc. Occhiogrosso 1. Rule 42.65, however, addresses (a) the weight given to expert testimony that does not disclose underlying facts or data on which the opinion is based, (b) the showing required if a party seeks to rely on a technical test or data from such a test, and (c) the exclusion of expert testimony on United States patent law or patent examination practice. As such, Rule 42.65 does not apply to a determination whether to exclude Mr. Occhiogrosso's testimony.

<sup>7</sup> With some enumerated exceptions, the Federal Rules of Evidence apply to an *inter partes* review. 37 C.F.R. § 42.62.

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and methods, and (d) the witness has applied the principles and methods reliably to the facts of the case.

Testimony on the issue of unpatentability proffered by a witness who is not “qualified in the pertinent art” generally is not admissible under FRE 702. *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1363–64 (Fed. Cir. 2008). In determining who is qualified in the pertinent art under FRE 702, we need not find a complete overlap between the witness’s technical qualifications and the problem confronting the inventor or the field of endeavor. *See SEB S.A. v. Montgomery Ward & Co., Inc.*, 594 F.3d 1360, 1372–73 (Fed. Cir. 2010) (upholding admission of the testimony of an expert who admittedly lacked expertise in the design of the patented invention, but had experience with materials selected for use in the invention); *Mytee Prods., Inc. v. Harris Research, Inc.*, 439 Fed. App’x 882, 886–87 (Fed. Cir. 2011) (non-precedential) (upholding admission of the testimony of an expert who “had experience relevant to the field of the invention,” despite admission that he was not a person of ordinary skill in the art).

Patent Owner contends that, to qualify as an expert under FRE 702, Mr. Occhiogrosso must be a person of ordinary skill in the art, and that Mr. Occhiogrosso is not a person of ordinary skill in the art because “he is an information technology (“IT”) generalist” and does not have “any specific experience in the context of [telecommunications relay systems] for the deal and the HOH [hear of hearing].” PO Mot. to Exc. Occhiogrosso 5; *see also id.* at 2-4 (discussing the definition of a person of ordinary skill in the art); 5-7 (discussing Mr. Occhiogrosso’s experience with respect to these

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factors). Petitioner responds that Patent Owner's definition of the level of ordinary skill in the art conflates a requirement for skill in the relevant technical art ("telecommunications systems [having] voice-to-text transcription") with skill in one particular commercial sector that applies that technical art (telecommunications services for deaf or hard of hearing users). Pet. Opp. to Mot. to Exc. 1, 6-7.

Patent Owner's arguments are unpersuasive at the outset because, to testify as an expert under FRE 702, a person need not be a person of ordinary skill in the art, but rather "qualified in the pertinent art." *Sundance*, 550 F.3d at 1363-64; *SEB*, 594 F.3d at 1372-73; *Mytee*, 439 Fed. App'x at 886-87. Patent Owner's arguments are also unpersuasive because they attempt to constrict the "pertinent art," i.e., the pertinent technology, to a particular subset of individuals who use the pertinent technology, rather than the pertinent technology itself. See Pet. Opp. to Mot. to Exc. 4-5 (arguing that the problems in the pertinent art are not "uniquely related" to the deaf and hard-of-hearing).

We agree with Petitioner that the relevant field is telecommunication technologies. See Pet. Opp. to Mot. to Exc. 7 ("Mr. Occhiogrosso's qualifications should be analyzed with respect to the pertinent art of telecommunication technologies in which an intermediary facilitates voice-to-text transcription."). The '346 patent states that the "present invention relates to the general field of telephone communications." Ex. 1001, 1:16-17. Patent Owner correctly indicates that the '346 patent focuses on a particular application of that technology: people who need assistance in using telecommunications devices. PO Mot. to Exc. Occhiogrosso 4 (citing



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Ex. 1001, 1:16-20). That focus, however, is not sufficient to dismiss the express statement of the '346 patent that the “invention relates to the general field of telephone communications.” Ex. 1001, 1:16-17. The '346 patent also summarizes the invention as the use of a speech recognition computer program trained to the voice of the call assistant to translate promptly the words spoken by an intermediary call assistant into a “high speed digital communication message [that] is then transmitted electronically promptly by telephone to a visual display accessible to the” hearing-assisted user. *Id.* at 2:51-58.

Thus, we determine the pertinent art to be telecommunications systems, because any communications technology would be pertinent art to the '346 patent. Although assistive technology may be more pertinent, and assistive technology for the deaf and hearing impaired, using voice-to-text relays, may be most pertinent, anything in the telecommunications technology field would be pertinent to the inventor when considering the problem.

The qualifications of Mr. Occhiogrosso, as summarized in his curriculum vitae (Ex. 1020), qualify him to give expert testimony on the subject of telecommunication technologies. He possesses a Bachelor of Science in Electrical Engineering and a Master of Science in Electrical Engineering. Ex. 1020, 2. Mr. Occhiogrosso testifies that he has more than thirty years of experience in the field of telecommunications and information technology, and he has planned, designed, implemented, and managed large scale projects involving wired and wireless communication systems, including transmission of voice and data. Ex. 1019 ¶ 6; *see also* Ex. 1020,

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2-6 (detailing Mr. Occhiogrosso's enterprise consulting engagements, research and development, and wireless experience).

Moreover, to the extent Mr. Occhiogrosso is more familiar with general telecommunications technology and less familiar with voice-to-text or its application to the deaf or hearing-impaired, or to the extent that Mr. Occhiogrosso's testimony is inconsistent or unsupported, we weigh Mr. Occhiogrosso's testimony accordingly, taking into account the extent of his expertise in these areas. *See, e.g., Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) (holding the Board has discretion to give more weight to one item of evidence over another "unless no reasonable trier of fact could have done so"); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) ("[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.").

Patent Owner also contends that Mr. Occhiogrosso's testimony fails to identify the level of skill in the art in his declaration (Ex. 1019), fails to give any consideration to what one of ordinary skill in the art would have known or not known, is unsupported and unreliable, and does not consider secondary considerations. PO Mot. to Exc. Occhiogrosso 8; PO Resp. 7-9; PO Reply to Opp. to Mot. to Exc. 2-3. Petitioner counters that Mr. Occhiogrosso "consistently applied his definition of a [person of ordinary skill in the art] throughout his testimony" and, in a supplemental declaration, Mr. Occhiogrosso "made explicit the level of ordinary skill he applied" in Exhibit 1019. Pet. Opp. to Mot. to Exc. 15 (citing Ex. 1037 ¶ 12).

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Patent Owner's argument goes more to the weight we should accord Mr. Occhiogrosso's testimony, rather than its admissibility. It is within our discretion to assign the appropriate weight to the testimony offered by Mr. Occhiogrosso. *See, e.g., Yorkey*, 601 F.3d at 1284. Moreover, Mr. Occhiogrosso provided a supplemental declaration identifying the level of skill in the art and confirming his opinion presented in the earlier declaration (Ex. 1019) in view of the level of skill in the art. *See* Ex. 1037 ¶¶ 12-17, 19. Mr. Occhiogrosso testimony also confirmed his legal understanding of obviousness, including secondary considerations. *See* Ex. 1037 ¶¶ 20-25.

Under the totality of these circumstances, we decline to exclude the testimony of Mr. Occhiogrosso. Accordingly, Patent Owner's Motion to Exclude Mr. Occhiogrosso's testimony (Paper 41) is *denied*.

#### *E. Obviousness over Ryan and Alshawi*

Petitioner asserts that claims 1 and 2 of the '346 patent are unpatentable under 35 U.S.C. § 103(a) for obviousness over Ryan and Alshawi. Pet. 52-57 (referring to Pet. 33-39, 50-52). Patent Owner challenges Petitioner's assertion. PO Resp. 18-47.

To support its contention that claims 1 and 2 would have been obvious over Ryan and Alshawi, Petitioner relies on analysis provided with respect to the references and declaration testimony by Mr. Occhiogrosso. Pet. 31-40, 50-57 (citing Ex. 1019). Patent Owner responds, relying on declaration testimony by Mr. Ludwick and others. PO Resp. 20-47 (citing Exs. 2001-2005, 2010). Having considered the parties' contentions and supporting

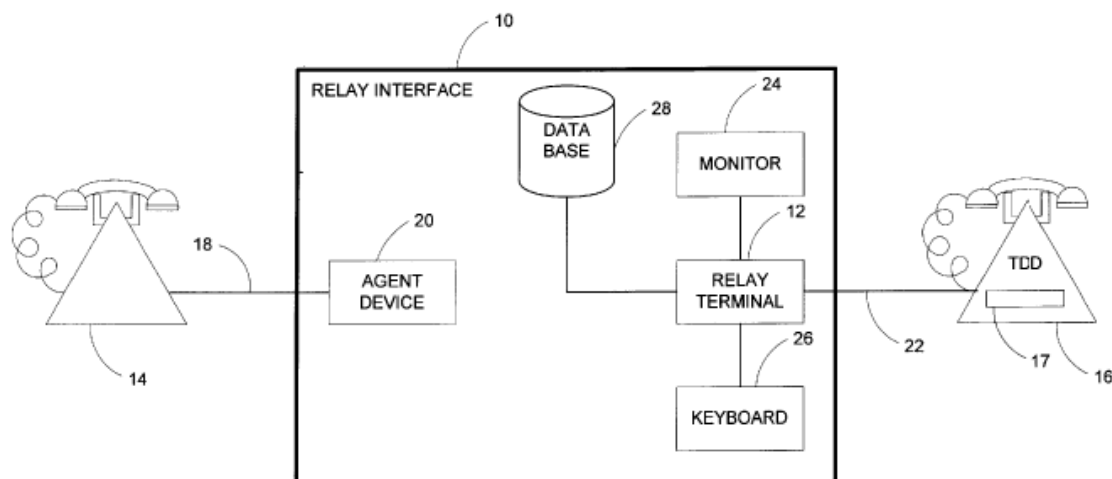
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evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 2 are unpatentable for obviousness over Ryan and Alshawi for the reasons set forth below.

### *1. Summary of Ryan*

Ryan discloses a telecommunications relay system with a relay interface for communicating between a standard telephone set and a TDD for a hearing impaired person. Ex. 1005, Abstract. Figure 1 of Ryan is set forth below:



**FIG. 1**

Figure 1 is a diagram of the telecommunications relay system.

As shown in Figure 1, Ryan's telecommunications relay interface 10 includes operator/relay terminal 12 and couples standard telephone set 14 with TDD 16. Ex. 1005, 3:34-35, 43-51. An operator or relay agent typically is responsible for manipulating relay terminal 12 to relay messages between telephone 14 and TDD 16. Ryan indicates, however, that speech

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recognition software could be used to automate the relay function so that an operator or relay agent would not be required. *Id.* at 4:19-24. Ryan specifically describes using speech recognition software at agent device 20 to interpret a voice message from a caller at telephone 14 and convert the message from a voice format to a data format. *Id.* at 4:24-27. Ryan further indicates:

If the software is specifically designed to recognize the voice of particular relay agents, the accuracy of the relay service may be improved by having one of these agents listen to the caller and repeat the voice message into a terminal adapted to convert the agent's voice message into a data message.

*Id.* at 4:33-38.

## *2. Summary of Alshawi*

Alshawi describes a videophone providing “speech-to-subtitles translation for communication between people speaking different languages.” Ex. 1010, 1:6-9; Title. To address the problem of “delay between one party speaking and the other party hearing the synthesized translation which can make communication awkward and unnatural” (*id.* at 1:31-33), Alshawi's system continuously displays a translation of each user's speech in text form on the other user's videophone screen. “At the same time, the original, untranslated speech is played over a speaker.” *Id.* at 1:49-52. Alshawi indicates “[h]earing the original speech can also reduce misunderstanding because emotional clues are available to the listener.” *Id.* at 2:1-3.

Figure 3 of Alshawi is set forth below:

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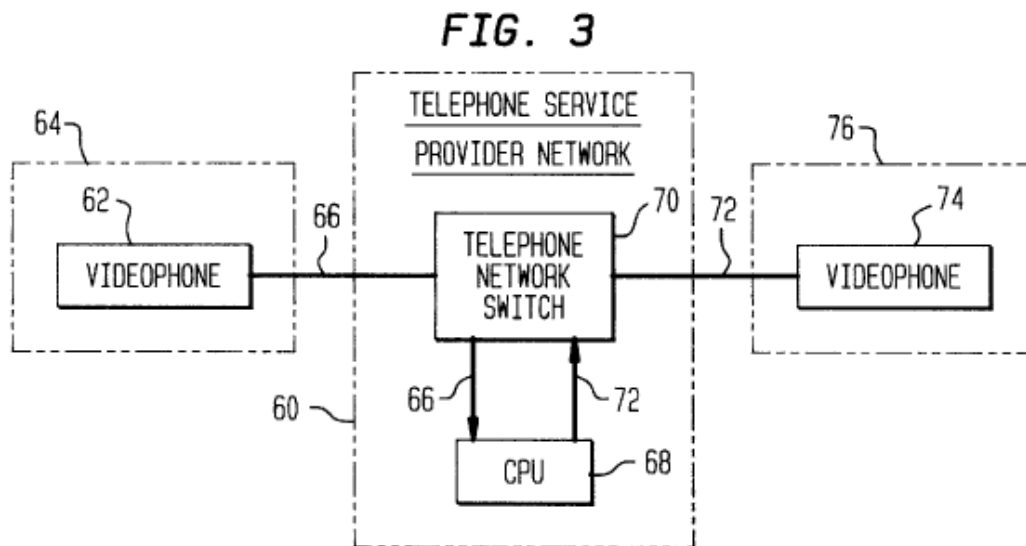


Figure 3 is a diagram illustrating subtitle generation being performed by a telephone service provider network.

Alshawi describes an embodiment, shown in Figure 3, in which continuous speech-to-subtitles translation is provided by a telephone service provider. *Id.* at 4:4-7. Videophone 62 outputs standard videophone signal 66, which is sent to telephone service provider network 60, which, in turn, generates translated subtitles corresponding to the original speech of the person using videophone 62. *Id.* at 3:58-65. Central processing unit (“CPU”) 68 at telephone service provider network 60 outputs signal 72, which consists of an audio signal containing the sending party’s original speech and a subtitled video portion. *Id.* at 3:65-4:1. Signal 72 is sent to videophone 74, where it can be viewed by the receiving party. *Id.* at 4:1-3.

### 3. Independent Claim 1

Petitioner has established that the combination of Ryan and Alshawi teaches or suggests each limitation of claim 1. We review each of

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Petitioner's assertions and Patent Owner's arguments for each limitation of claim 1.

*a. relay system “transmitting the voice of the hearing user when speaking to the ear of the call assistant”*

Ryan teaches or suggests “operating a relay system using a call assistant to facilitate communication between a hearing user and an assisted user by telephone, the hearing user speaking words in voice.” Ex. 1005, 3:34-35, 43-51; Fig. 1 (Ryan's telecommunications relay interface 10 includes operator/relay terminal 12 and couples standard telephone set 14 with TDD 16); *see also id.* at 1:53-67 (describing a relay agent receiving a message over a voice channel from a standard telephone and transforming the voice message to be transmitted to a TDD for an assisted user); Pet. 33, 54.

Ryan, in this description, also teaches or suggests “transmitting the voice of the hearing user when speaking to the ear of the call assistant,” as recited in claim 1. Ex. 1005, 1:53-67 (describing a relay agent receiving a message over a voice channel from a standard telephone and transforming the voice message to be transmitted to a TDD for an assisted user).

*b. “the call assistant speaking” and “digital computer” limitations*

Ryan teaches or suggests “the call assistant speaking in voice the same words that the call assistant hears spoken by the hearing user into a microphone connected to a digital computer” and “digital computer using voice recognition computer software trained to the voice of the call assistant to translate the words of the voice spoken by the call

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assistant into a digital text message stream containing the words spoken by the call assistant,” as recited in claim 1.

Ryan teaches or suggests “the call assistant speaking” and “digital computer” limitations in describing the use of speech recognition software at agent device 20 (1) to interpret a voice message from a caller at telephone 14 and convert the message from a voice format to a data format and (2) for improved accuracy of the relay service when the relay agent repeats the voice message from the caller and speech recognition software, designed to recognize the voice of a particular relay agent, is used for converting the relay agent’s voice message to a data message. *See* Ex. 1005, 4:24-27 (“[S]peech recognition software could be employed at device 20 to interpret a voice message from a caller at phone 14 and convert the message from a voice format to a data format.”); *id.* at 4:33-38 (“If the [voice recognition] software is specifically designed to recognize the voice of particular relay agents, the accuracy of the relay service may be improved by having one of these agents listen to the caller and repeat the voice message into a terminal adapted to convert the agent’s voice message into a data message.”); *see also* Pet. 34-36, 54-55 (Petitioner asserting the same).

We also credit the testimony of Petitioner’s declarant, Mr. Occhiogrosso, that “a microphone connected to a digital computer” is present necessarily in Ryan’s relay system to convert the relay agent’s voice message into a data message using speech recognition software. Ex. 1019 ¶ 27; *see* Pet. 34. Thus, we find that Ryan suggests the recited “microphone connected to a digital computer.”



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Patent Owner argues that Ryan does not teach the recited digital computer. First, Patent Owner contends that Ryan does not teach the recited “voice recognition computer software trained to the voice of the call assistant.” PO Resp. 20-23. According to Patent Owner, Ryan’s software is not trained as required by Patent Owner’s interpretation of the required training. Rather, according to Patent Owner, Ryan discloses voice recognition software that is “designed,” which means the software is designed in advance of implementation at the source code level and, therefore, the software is not trained.

For the reasons noted previously, we do not agree the recited trained voice recognition software precludes training during software design, which Patent Owner acknowledges is disclosed by Ryan. PO Resp. 22 (“Ryan is disclosing software that has been construed to recognize the voice of particular relay agents.”). Thus, we do not agree with Patent Owner’s argument because it is not commensurate in scope with the claims.

Moreover, Patent Owner relies on Mr. Ludwick’s testimony asserting Ryan does not teach “voice recognition computer software trained to the voice of the call assistant.” PO Resp. 25-27 (citing Ex. 2001 ¶¶ 19-20). We do not find Mr. Ludwick’s testimony that Ryan’s voice recognition software is “designed to recognize the voice of particular relay agents” to be persuasive because Mr. Ludwick grounded his testimony in the state of the art in 1994, when the date of invention is 2001. *See* Ex. 2001 ¶ 19 (referring to the telecommunications relay service field in 1994), ¶ 20 (noting the needed technology “did not then exist”).

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Second, Patent Owner, relying on Mr. Ludwick's testimony, contends that Ryan does not disclose the recited "voice recognition software trained to the voice of the call assistant," because Ryan's "voice recognition software is written specifically to recognize the voices of a collection or group of people, rather than a particular, individual call assistant." PO Resp. 23-24 (citing Ex. 2001 ¶ 21). For the reasons noted previously, we do not agree that the claims are limited to voice recognition software trained to one and only one call assistant. Thus, we do not agree with Patent Owner's argument because it is not commensurate in scope with the claims.

Moreover, we are not persuaded by Patent Owner that a person of ordinary skill in the art would interpret Ryan as only disclosing software written specifically for a group of people (PO Resp. 23-24). Patent Owner's argument is unpersuasive because it relies on the level of ordinary skill in the art as reflected in a prior art patent filed in 1994, when the invention date of the challenged claims is February 14, 2001. *See* PO Resp. 24 (citing Ex. 2008, U.S. Patent No. 5,553,119 ("McAllister") filed on July 7, 1994).

Third, Patent Owner argues that Ryan does not teach "translat[ing] the words . . . spoken by the call assistant into a digital text message stream containing the words spoken by the call assistant," as recited in claim 1. PO Resp. 24-32. According to Patent Owner, Ryan, at most, is ambiguous as to the disclosure of a call agent translating the words spoken in voice by the call assistant into a digital text stream. *Id.* at 25-26. Patent Owner contends, based on the goals of Ryan to correct errors before displaying words and the context of the passage, that Ryan discloses a relay agent using "revoicing" as

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an error correction mechanism for individual, unrecognized letters of a word. PO Resp. 26-31.

We are not persuaded. Ryan’s technology is intended to “overcome[] the problem associated with existing telecommunications relay services by providing a system and method for correcting mistakes before the message is displayed at the end user’s TDD” (i.e., telecommunications device for the deaf). Ex. 1005, 2:35-38 (“Summary of the Invention”). In the above-quoted passage, Ryan describes ways to do so using speech recognition software. One way is automating the relay function so as to eliminate the need for a human operator. *Id.* at 4:19-24. To do so, Ryan describes using speech recognition software to convert the voice message from a caller to text “while providing an error correction feature for words not recognized by the software.” *Id.* at 4:24-28. Ryan further describes the error correction feature as having two forms—phonetic spelling of the unrecognized word by the speech recognition software or prompting the caller to spell the unrecognized word. *Id.* at 4:29-33. Ryan describes, in the passage, another way to improve the accuracy of a relay system before the text is displayed at the TDD—if the speech recognition software is designed specifically to recognize the voice of particular relay agents, a relay agent “listen[s] to the caller and repeat[s] the voice message into a terminal adapted to convert the agent’s voice message into a data message.” *Id.* at 4:33-38.

In contrast to Ryan’s description of the error correction by the *caller* spelling letters of an unrecognized word, Ryan unambiguously describes a *relay agent* repeating the voice message of the caller and having speech recognition software, designed specifically to recognize the voice of the

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relay agent, convert the agent's voice message into a data message. Thus, we are not persuaded that Ryan is ambiguous as to its disclosure of translating the words spoken by the call assistant, and we are not persuaded that Ryan discloses only the translation of letters (rather than words).

Fourth, Patent Owner argues that Ryan must be read narrowly in view of the state of the art of speech recognition software used in telecommunications relay service in 1994. PO Resp. 32-35. Patent Owner's argument is unpersuasive because the state of the art of the relevant technology in 1994 has limited probative value. Rather, the state of the art of the relevant technology at the time of invention, which is February 14, 2001 for the reasons discussed previously, is of greater significance. *See* 35 U.S.C. § 103(a) ("A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious *at the time the invention was made* to a person having ordinary skill in the art to which said subject matter pertains.") (emphasis added). The '346 patent itself describes the state of voice recognition technology as being "capable of transcribing the words of the voice of the call assistant at the speed of a normal human communication" and identifies two commercially available software packages able to do that. Ex. 1001, 6:24-36.

For these reasons, we determine Ryan teaches or suggests a relay system that "transmit[s] the voice of the hearing user when speaking to the ear of the call assistant"; a relay system in which "the call assistant speak[s] in voice the same words that the call assistant hears spoken by the hearing

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user into a microphone connected to a digital computer”; and the recited digital computer.

*c. “transmitting” limitations and “displaying the digital text message to a captioned telephone device” limitation*

For claim 1 as a whole, Petitioner relies on a relay service that combines Ryan’s relay service with the transmission of both voice and text as described in Alshawi. *See* Pet. 54 (“By combining the transmission of both voice and text as described in *Alshawi* with the relay service of *Ryan*, the relay service would improve clarity in communications for the hearing impaired.”). In addition to the limitations discussed above, claim 1 further requires transmitting to the assisted user (i) “the voice of the hearing user” and (ii) “both the digital text message stream and the voice of the hearing user by telephone connection.” Claim 1 also recites “displaying the digital text message stream to a captioned telephone display device within sight of the assisted person.”

Alshawi’s describes a continuous speech-to-subtitles translation service provided by a telephone service provider for videophones to facilitate communication between people speaking different languages. Ex. 1010, 1:6-9, 3:54-4:7. Alshawi describes a videophone sending a standard videophone signal to telephone service provider network 60, which, in turn, generates translated subtitles corresponding to the original speech of the person using videophone. *Id.* at 3:58-65. The signal sent to the receiving videophone consists of an audio portion, which contains the sending party’s original speech, and a subtitled video portion. *Id.* at 3:54-4:3. The translated text can be viewed by the receiving party. *Id.* As such, Alshawi

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describes transmitting both the translated text and the audio of the sending party's original speech to a videophone, where the transcribed text is displayed.

Petitioner's proposed combination, which combines Ryan's relay service with the transmission of both voice and text as described in Alshawi (Pet. 54), teaches or suggests the required transmitting and displaying limitations recited in claim 1. Alshawi's signal sent from the service provider includes the original speech of the person, and the translated text is sent to a videophone where the text is displayed to the user being assisted with language translation. This teaches or suggests "transmitting both the digital text message stream and the voice of the hearing user by telephone connection to the assisted user" and "transmitting the voice of the hearing user to the assisted user," as recited in claim 1. Further, Alshawi describes a videophone that transmits and receives voice signals, receives text information, and displays text to an assisted user—a captioned telephone display device.

Patent Owner argues that Ryan alone does not disclose the transmitting or displaying limitations (PO Resp. 24-36) and argues that Alshawi alone does not disclose the transmitting or displaying limitations (PO Resp. 35-38). We are not persuaded that Ryan does not teach or suggest the displaying limitation for the reasons discussed previously.

Moreover, the pertinent question is whether the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art in view of the combined references, not whether the references in the asserted combination individually teach the subject matter of claims 1 and 2.

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35 U.S.C. § 103(a); *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“the test [for obviousness] is what the combined teachings of the references would have suggested to those of ordinary skill in the art”). Thus, we find unpersuasive Patent Owner’s arguments that amount to attacks on Ryan and Alshawi individually, without sufficient consideration of the combination of Ryan and Alshawi.

Further, Patent Owner argues that Alshawi does not disclose the digital text test message stream because the words are translated and, therefore, are not the “same words that the call assistant hears spoken by the call assistant.” PO Resp. 37-38. We find this unpersuasive because Petitioner’s combination relies on Ryan as teaching or suggesting “the call assistant speaking in voice” limitation. Pet. 54.

Having reviewed the papers submitted by the parties and the evidence cited therein, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of claim 1 of the ’346 patent would have been obvious to a person of ordinary skill in the art in view of the teachings of Ryan and Alshawi.

#### *4. Independent Claim 2*

Petitioner’s treatment of independent claim 2 is similar substantially to its treatment of independent claim 1. *Compare* Pet. 33-37 (indicating portions of Ryan that teach or suggest claim 1) *with id.* at 37-40 (indicating portions of Ryan that teach or suggest claim 2); *compare id.* at 50-51 (indicating portions of Alshawi that teach or suggest claim 1) *with id.* at 52 (indicating portions of Alshawi that teach or suggest claim 2).

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Patent Owner does not set forth separate arguments for claim 2. PO Resp. 20-37 (arguing the combination of Ryan and Alshawi fails to disclose all of the elements of claims 1 and 2). Having reviewed the papers submitted by the parties and the evidence cited therein, we determine that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 2 of the '346 patent would have been obvious to a person of ordinary skill in the art in view of the teachings of Ryan and Alshawi.

#### *5. Reason to Combine Ryan and Alshawi*

Petitioner, relying on testimony of its declarant, Mr. Occhiogrosso, contends that it would have been obvious to combine “the transmission of both voice and text as described in *Alshawi* with the relay service of *Ryan* [to] improve clarity in communications for the hearing impaired.” Pet. 54 (citing Ex. 1019 ¶ 43-44). According to Mr. Occhiogrosso, Ryan recognized that “the accuracy of the relay service” would be improved by having the relay agent repeat the voice message of the caller and use speech recognition software to convert the caller’s words to a data message to send to the assisted caller. Ex. 1019 ¶ 43 (citing Ex. 1005, 4:33-38); Pet. 53. Mr. Occhiogrosso further explains that, like Ryan, Alshawi “was also concerned with accuracy in communication, and recognized that misunderstandings could be reduced by providing both voice and text to a caller.” Ex. 1019 ¶ 43 (citing Ex. 1010, 2:1-10); Pet. 53. Thus, to improve clarity in communications for the hearing impaired, a person of ordinary skill in the art would combine the relay services of Ryan with the transmission of both voice and text in Alshawi to provide both voice of the



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hearing user and text of the hearing user's words to the hearing impaired user of Ryan's relay. Ex. 1019 ¶¶ 43-44; Pet. 53-54.

Patent Owner argues there is insufficient reason to combine Ryan and Alshawi. First, Patent Owner contends that a person of skill in the art "would have no incentive to incorporate voice and text transmission from Alshawi since the system of Ryan is incompatible with voice and text transmission." PO Resp. 39. We find unpersuasive Patent Owner's arguments that seem to require bodily incorporation of Alshawi's parts into Ryan's system as of 1994 and 1995. PO Resp. 40-41. A determination of obviousness is based not on bodily incorporation of parts from one disclosed system into another, but what the combined teachings would have suggested to one with ordinary skill in the art. *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012); *Keller*, 642 F.2d at 425.

Moreover, the relevant date is not the earliest effective filing date of Ryan (1994) or Alshawi (1995). Rather, the relevant date is the date of the invention of the '346 patent, February 2001. *See* 35 U.S.C. § 103(a) ("A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious *at the time the invention was made* to a person having ordinary skill in the art to which said subject matter pertains.") (emphasis added).

Further, we are not persuaded by Patent Owner's assertion that a person of ordinary skill would not combine Alshawi's video call with Ryan's relay system because video call "users could simply sign, rather than speak, which would make transcription of voice unnecessary." PO Resp. 42

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(citing Ex. 2001 ¶ 35). We credit Mr. Occhiogrosso's explanation that improved accuracy would result by providing both voice and text (Ex. 1019 ¶ 44). The general principle of Mr. Occhiogrosso's testimony is additional channels of communication improve communication. This undercuts Mr. Ludwick's position that video call "users could simply sign, rather than speak, [in a] video relay service making transcription of voice unnecessary" (Ex. 1019 ¶ 44). It is within our discretion to assign the appropriate weight to the testimony offered by Mr. Occhiogrosso and Mr. Ludwick. *See, e.g., Yorkey*, 601 F.3d at 1284.

Second, Patent Owner argues Alshawi and Ryan each teach away from the proposed combination. PO Resp. 42-44. According to Patent Owner, Alshawi emphasizes that a voice signal and translated text must be presented simultaneously and continuously. PO Resp. 42-43. As such, Ryan's error correction techniques would delay the presentation of text, which "would result in precisely the sort of awkward and unnatural experience that Alshawi teaches against." PO Resp. 43.

We do not agree with Patent Owner that Alshawi teaches away from the claimed invention. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) (prior art does not teach away from claimed subject matter merely by disclosing a different solution to a similar problem unless the prior art also criticizes, discredits, or otherwise discourages the solution claimed). Rather, as Petitioner notes (Reply 11), a person of ordinary skill in the art need not include the error correction of Ryan in the combination because the claims do not require error correction.

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For a similar reason, we do not agree with Patent Owner's argument (PO Resp. 43-44) that, because Ryan "teaches the desirability of *delaying* transmission of text until the text has been checked and corrected," Ryan teaches away from the claimed invention. The combination need not include Ryan's error correction. Accordingly, Ryan does not teach away from the claimed invention.

Patent Owner then argues that the proposed modification would change the principle of operation of Ryan. PO Resp. 44-47. We disagree because we credit the testimony of Mr. Occhiogrosso that the principle of operation of the portion of Ryan used in the combination is having a relay agent repeat a hearing user's words to provide text to an assisted user and that principle of operation is unchanged in the combination. *See* Ex. 1037 ¶ 64; Reply 12. It is within our discretion to assign the appropriate weight to the testimony offered by Mr. Occhiogrosso. *See, e.g., Yorkey*, 601 F.3d at 1284.

In view of the foregoing, we are persuaded that Petitioner, with support of its declarant, has articulated a sufficient reason to support a conclusion of obviousness in view of Petitioner's combination of Ryan and Alshawi. *See KSR*, 550 U.S. at 418 ("[T]here must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.") (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

#### *6. Secondary Considerations*

Factual inquiries for an obviousness determination include secondary considerations based on evaluation and crediting of objective evidence of

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nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Notwithstanding what the teachings of the prior art would have suggested to one with ordinary skill in the art at the time of the '346 patent's invention, the totality of the evidence submitted, including objective evidence of nonobviousness, may lead to a conclusion that the challenged claims would not have been obvious to one with ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). Secondary considerations may include any of the following: long-felt but unsolved need, failure of others, unexpected results, commercial success, copying, licensing, and praise. *See Graham*, 383 U.S. at 17; *Leapfrog Enters.*, 485 F.3d at 1162.

To be relevant, evidence of nonobviousness must be commensurate in scope with the claimed invention. *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) (citing *In re Tiffin*, 448 F.2d 791, 792 (CCPA 1971)); *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998). Thus, to be accorded substantial weight, there must be a nexus between the merits of the claimed invention and the evidence of secondary considerations. *In re GPAC*, 57 F.3d at 1580. “Nexus” is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in determining nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). The burden of showing that there is a nexus lies with the Patent Owner. *Id.*; *see Paulsen*, 30 F.3d at 1482.

Patent Owner alleges “substantial praise for the inventions claimed in [Patent Owner’s] patents, including the '346 Patent, the long-felt but unresolved need of the deaf and hard of hearing community, the commercial

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success of the products and services embodying the invention, and the failure of others to provide a relay service or other solution that provided the benefits of the claimed inventions.” PO Resp. 49-51. For support, Patent Owner proffers declarations by Ms. Brenda Battat (Ex. 2004) and Ms. Constance Phelps (Ex. 2005) describing general innovations of Patent Owner’s CapTel Service and its CapTel phone and describing their benefits to the deaf and hard of hearing community. PO Resp. 50-51; *see* Ex. 2004 ¶¶ 18-19, 25-41.

In an attempt to establish the requisite nexus, Patent Owner relies on a declaration of Mr. Ludwick (Ex. 2002) asserting that it “explain[s], on a feature by feature basis, the nexus between those secondary considerations and the claimed design” and “illustrates, in chart form, that the CapTel system and various models of CapTel phones embody the claims of the present invention.” PO Resp. 51.

Patent Owner’s Response contains no substantive arguments. *Id.* Instead, Patent Owner merely lists various common forms of secondary considerations evidence, without exposition. This does not provide sufficient analysis for us to determine whether Patent Owner has provided adequate evidence of secondary considerations and a nexus between any such evidence and the merits of the claimed invention. Thus, Patent Owner’s broad contentions regarding secondary considerations in its Patent Owner Response do not demonstrate nonobviousness.

Moreover, Patent Owner’s declarations fail to establish a nexus between the merits of the claimed invention and the evidence of secondary considerations. To show a nexus, Patent Owner relies on Mr. Ludwick’s

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declaration, which describes his visit to CapTel, Inc.'s relay center in Madison, Wisconsin. Ex. 2002 ¶ 47. Mr. Ludwick's chart presents his conclusions based on personal observation that the CapTel Service meets each claim limitation of the '346 patent. Ex. 2002 ¶ 48 (pages 28-30). For example, regarding "a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream," recited in claims 1 and 2, Mr. Ludwick asserts:

I personally observed that the CapTel Service meets this claim element. I further confirmed this from my own knowledge of CapTel Service. This feature of the CapTel Service relay is present when the Service is used with each of the CapTel Phones and has always been included as part of the CapTel Service.

Ex. 2002 ¶ 48 (page 28).

Because Mr. Ludwick's conclusions are based on personal observations, without sufficient supporting facts or data, his testimony has little probative value. *See In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d at 1368 ("[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations."); *see also* Fed. R. Evid. 702 (providing one may testify in the form of an opinion if the testimony is based on sufficient facts or data). As such, Mr. Ludwick's conclusory assertions do not provide a sufficient connection between objective evidence and the claimed invention,

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and so do not establish the requisite nexus between the merits of the claimed invention and the evidence of secondary considerations.

Accordingly, Patent Owner fails to provide sufficient credible evidence to support its allegations of nonobviousness based on secondary considerations. When we balance Petitioner's evidence of obviousness against Patent Owner's asserted objective evidence of nonobviousness, we determine that a preponderance of the evidence supports Petitioner's position that claims 1 and 2 would have been obvious over Ryan and Alshawi.

### III. CONCLUSION

Petitioner has proven by a preponderance of the evidence that claims 1 and 2 of the '346 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Ryan and Alshawi.

Patent Owner's Motion to Exclude Evidence (Paper 41) is *denied*.

### IV. ORDER

Accordingly, it is hereby:

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 2 of U.S. Patent No. 6,594,346 B2 are unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude Evidence (Paper 41) is denied; and

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FURTHER ORDERED that, because this is a final written decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.



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PETITIONER:

Brian W. Oaks  
Bryant C. Boren Jr.  
Harper S. Batts  
Adam F. Smoot  
Joseph Gray  
BAKER BOTTS L.L.P.  
brian.oaks@bakerbotts.com  
bryant.c.boren@bakerbotts.com  
harper.batts@bakerbotts.com  
adam.smoot@bakerbotts.com  
joseph.gray@bakerbotts.com

PATENT OWNER:

Michael Jaskolski  
Martha Snyder  
Nikia L. Gray  
Michael J. Curley  
QUARLES & BRADY LLP  
michael.jaskolski@quarles.com  
martha.snyder@quarles.com  
nikia.gray@quarles.com  
Michael.curley@quarles.com

Trials@uspto.gov  
Tel: 571-272-7822

Paper 67  
Entered: December 1, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CAPTIONCALL, LLC,  
Petitioner,

v.

ULTRATEC, INC.,  
Patent Owner.

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Case IPR2013-00545  
Patent 6,594,346 B2

Before WILLIAM V. SAINDON, BARBARA A. BENOIT, and  
LYNNE E. PETTIGREW, *Administrative Patent Judges*.

BENOIT, *Administrative Patent Judge*.

DECISION  
Denying Patent Owner's Request for Rehearing  
*37 C.F.R. § 42.71*

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## INTRODUCTION

CaptionCall, LLC (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1 and 2 of U.S. Patent No. 6,594,346 B2 (Ex. 1001, “the ’346 patent”). Paper 1 (“Pet.” or “Petition”). We instituted an *inter partes* review for claims 1 and 2. Paper 6. In our Final Written Decision, we determined that Petitioner had shown by a preponderance of the evidence that claims 1 and 2 were unpatentable. Paper 65 (“Final Dec.” or “Final Decision”). Patent Owner, Ultratec, Inc., requests a rehearing of the Final Decision by an expanded panel. Paper 66 (“Req.” or “Request”).

Having considered Patent Owner’s Request, we decline to modify our Final Decision and deny the Request for Rehearing.

## ANALYSIS

A request for rehearing must identify specifically all matters the party believes we misapprehended or overlooked, and the place where each matter was addressed previously in a motion, an opposition, or a reply. 37 C.F.R. § 42.71(d). Additionally, Patent Owner, as the party challenging the Final Decision, has the burden of showing the decision should be modified. *Id.*

We first address Patent Owner’s allegations of matters that we misapprehended or overlooked (Req. 1, 4–11). We then address Patent Owner’s allegations of improper panel composition (*id.* at 1–4).

### *Matters Allegedly Misapprehended or Overlooked*

Patent Owner alleges we misapprehended or overlooked matters involving evidence of secondary considerations, the law concerning obviousness, and claim construction. We address each issue in turn.

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*Evidence of Secondary Considerations*

Patent Owner alleges that we improperly made a determination of obviousness before separately analyzing Patent Owner's evidence of secondary considerations. Req. 4–5. We disagree. Rather, in Section II.D of our Final Decision, we determined the scope and content of the asserted prior art (Final Dec. 20–22); discussed the claimed subject matter relative to the asserted prior art, which included identifying differences between the claimed subject matter and the prior art in the context of the ordinary level of skill in the art (Final Dec. 22–31); determined Petitioner, with support of its declarant, had articulated a sufficient reason to support a conclusion of obviousness (Final Dec. 32–35); and analyzed Patent Owner's secondary considerations of nonobviousness (Final Dec. 35–39). *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Only after that twenty-page discussion in Section II.D did we discuss the ultimate conclusion of obviousness of the claimed subject matter. Final Dec. 39.

Unlike the International Trade Commission in *Apple Inc. v. International Trade Commission*, 725 F.3d 1356, 1365 (Fed. Cir. 2013), cited by Patent Owner in its Request, we considered evidence relating to the *Graham* factors—including objective evidence of secondary considerations presented by Patent Owner—before determining the ultimate issue of obviousness. *Compare* Req. 4–5 *with* Final Dec. 20–39; *see Apple*, 725 F.3d at 1365 (“The ITC, however, never mentioned, much less weighed as part of the obviousness analysis, the secondary consideration evidence . . . presented.”). As noted in our Final Decision, we determined that:

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Patent Owner fails to provide sufficient credible evidence to support its allegations of nonobviousness based on secondary considerations. When we balance Petitioner's evidence of obviousness against Patent Owner's asserted objective evidence of nonobviousness, we determine that a preponderance of the evidence supports Petitioner's position that claims 1 and 2 would have been obvious over Ryan and Alshawhi.

Final Dec. 39. Thus, we recognized that the “ultimate conclusion of obviousness is a legal conclusion to be reached after weighing all the evidence on both sides.” *Apple*, 725 F.3d at 1365.

Patent Owner further contends we refused to consider Patent Owner's secondary considerations evidence. Req. 5. This is incorrect. We considered the arguments and evidence presented in Patent Owner's Response. Final Dec. 36–37. We concluded Patent Owner did “not provide sufficient analysis for us to determine whether Patent Owner has provided adequate evidence of secondary considerations and a nexus between any such evidence and the merits of the claimed invention.” *Id.*

In its Request, Patent Owner seems to suggest that we should have reviewed and analyzed the entirety of each of three declarations submitted by Patent Owner in support of its secondary considerations contention (Exs. 2003, 2004, and 2005). Req. 5. This also is incorrect because, in its Patent Owner Response, Patent Owner merely cited each declaration in its entirety without citing with particularity portions of these declarations. PO Resp. 49 (citing “declarations by Brenda Battat (Ex. 2004) and Constance Phelps (Ex. 2005)” and “declaration of Paul Ludwick (Ex. 2003)”).

We will not scour the 143 pages of declaration evidence submitted by Patent Owner and generally serve as an advocate for Patent Owner by

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finding evidence of secondary considerations in the voluminous exhibits submitted. *Cf. DeSilva v DiLeonardi*, 181 F.3d 865, 866–67 (7th Cir. 1999) (“A brief must make all arguments accessible to the judges, rather than ask them to play archaeologist with the record.”); *Ernst Haas Studio, Inc. v. Palm Press, Inc.*, 164 F.3d 110, 111–12 (2d Cir. 1999) (“Appellant’s Brief is at best an invitation to the court to scour the record, research any legal theory that comes to mind, and serve generally as an advocate for appellant. We decline the invitation.”).

*Testimony of Patent Owner’s Declarant*

Patent Owner alleges we improperly disregarded Patent Owner’s declarant’s personal observations that secondary considerations of nonobviousness were commensurate in scope with the claimed subject matter. Req. 6–7. Patent Owner asserts that its declarant’s testimony consisted of personal observations and not opinion testimony. Req. 6.

As noted in our Final Decision, to show the requisite nexus, Patent Owner relied on its declarant’s testimony describing his visit to CapTel, Inc.’s relay center in Madison, Wisconsin. Final Dec. 37–38 (citing Ex. 2002 ¶ 47). We found the “conclusory assertions do not provide a sufficient connection between objective evidence and the claimed invention, and so do not establish the requisite nexus between the merits of the claimed invention and the evidence of secondary considerations.” Final Dec. 38–39.

We did not disregard this testimony; rather, we found it insufficient. To illustrate this insufficiency, in our Final Decision, we cited an example of the testimony provided for the disputed limitation “a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package trained to the voice of the call

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assistant to translate the words spoken in voice by the call assistant into a digital text stream”:

I personally observed that the CapTel Service meets this claim element. I further confirmed this from my own knowledge of CapTel Service. This feature of the CapTel Service relay is present when the Service is used with each of the CapTel Phones and has always been included as part of the CapTel Service.

Final Dec. 38 (citing Ex. 2002 ¶ 48 (page 28)). We found that, because the declarant’s conclusions were based on personal observations, without sufficient supporting facts or data, his testimony provided little probative value. Final Dec. 38.

We reject Patent Owner’s assertion that, because there is no testimony to the contrary, we must accept its declarant’s “personal observations” on the claimed features being present in the system provided by CapTel Service and thereby conclude a nexus exists. Req. 6–7. We cited proper authority in the Final Decision for why we gave little probative value to this testimony of Patent Owner’s declarant—such “conclusory assertions do not provide a sufficient connection between objective evidence and the claimed invention.” Final Dec. 38 (citing *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) (“[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.”)). In contrast to the case cited by Patent Owner, *Tudor v. Department of Treasury*, 639 F.3d 1362, 1365 (Fed. Cir. 2011), which involves testimony concerning a factual issue as to whether approval authority for referring investigations for prosecution was given, here we are weighing the conclusion of Patent Owner’s declarant that “the CapTel Service meets this claim element,”

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without sufficient supporting facts or data as to why the CapTel Service meets the limitations in the challenged claims.

*In re Mouttet*

Patent Owner contends that we misapprehended *In re Mouttet*, 686 F.3d 1322 (Fed. Cir. 2012) in finding a motivation to combine Ryan<sup>1</sup> and Alshawi<sup>2</sup> and, therefore, erred in determining that the challenged claims would have been obvious. Req. 7–8 (citing Final Dec. 33). The Final Decision cited *Mouttet* for the proposition that a “determination of obviousness is not based on bodily incorporation of parts from one disclosed system into another, but what the combined teachings would have suggested to one with one of ordinary skill in the art.” Final Dec. 33 (citing *Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012); *In re Keller*, 642 F.2d 412, 425 (CCPA 1981)). We disagree that we misapprehended *Mouttet*, which states:

It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements. *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc) (“Etter’s assertions that Azure cannot be incorporated in Ambrosio are basically irrelevant, the criterion being not whether the references could be physically combined but whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole.”); *In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983) (“[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review.”); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is not whether the features of a secondary reference may be bodily

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<sup>1</sup> U.S. Patent No. 5,809,112 (Ex. 1004).

<sup>2</sup> U.S. Patent No. 5,815,196 (Ex. 1010).



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incorporated into the structure of the primary reference....”).

*In re Mouttet*, 686 F.3d at 1332. Thus, we are not persuaded that we misapprehended *Mouttet*. Nor did we “disregard[] Patent Owner’s counter-evidence that there would be disincentives for a [person of ordinary skill in the art] to combine *Ryan* and *Alshawi*,” “given that *Alshawi*’s features are incompatible with the TDD devices with which *Ryan* is used.” Req. 8. Rather, in finding a sufficient reason one of ordinary skill in the art would combine the references, we considered the reasons identified by the Petition, weighed the testimony of the respective declarants, and considered Patent Owner’s arguments. Final Dec. 32–35.

#### *Claim Construction*

Because the parties articulated different views on how “trained to the voice of the call assistant” should be interpreted relative to asserted prior art, we analyzed Patent Owner’s implied constructions of the term and Patent Owner’s declarant’s testimony concerning the same. Final Dec. 8–10. In its Request for Rehearing, Patent Owner argues that we “misapprehended claim construction law” in determining software “trained to the voice of the call assistant” was not limited to training to the voice of one and only one particular call assistant and did not preclude voice recognition software that is designed or built in advance of implementation at the source code level to the voice of a call assistant. Req. 9–11.

First, Patent Owner contends that we erroneously relied on the Specification’s disclosure of “voice pattern.” Req. 9–11. We disagree that our reliance on the Specification’s “Brief Summary of the Invention,” which indicates “a speech recognition computer program which has been trained to

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the voice *pattern* of the call assistant,” was improper. *See* Final Dec. 8 (quoting Ex. 1001, 2:51–54).

Rather, in our Final Decision, we contrasted the Specification’s use of “voice *pattern* of the call assistant” in its “Brief Summary of the Invention” with its use of “a voice recognition software package which is specifically trained to the voice of that *particular* call assistant” in the context of a particular embodiment of the invention shown in Figure 1. Final Dec. 8–9 (quoting Ex. 1001, 2:51–54, 6:21–24).

Based on the evidence in the Specification (including the Specification’s disclosure of “a voice pattern”), we determined that the Specification did not indicate expressly that the voice recognition software is trained to the voice of only that particular call assistant or otherwise indicate that the voice recognition software is trained for the voice of only one call assistant. Final Dec. 8. We concluded that “we will not limit ‘trained to the voice of the call assistant’ to require training to the voice of only one particular call assistant, because the claim language encompasses the invention as disclosed in the Specification—software trained to a voice *pattern* of a call assistant.” *Id.* at 9 (citing Ex. 1001, 2:41–49 (“Summary of the Invention”)).

We turn next to Patent Owner’s argument, in its Request for Rehearing, that we erred in concluding that “trained to the voice of the call assistant” does not include a temporal constraint that precludes voice recognition software that is designed or built in advance of implementation at the source code level to the voice pattern of a call assistant. Req. 11 (citing Final Dec. 7). According to Patent Owner, it did not have an

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opportunity to address this issue because it was raised after briefing had concluded. Req. 11.

On the contrary, Patent Owner disputed during the *inter partes* review that Ryan disclosed “software trained to the voice of the call assistant to translate the words spoken in voice by the call assistant into a digital text stream,” as recited in independent claim 1. Final Dec. 24–25 (citing Pet. 34–36, 54–55 and PO Resp. 20–23). As noted in our Final Decision, Patent Owner argued in its Patent Owner Response that Ryan does not disclose the recited “voice recognition software trained to the voice of the call assistant” because Ryan discloses voice recognition software that is “designed.” Final Dec. 25 (citing PO Resp. 20–23). More specifically, according to Patent Owner, Ryan discloses software that is designed in advance of implementation at the source code level and, therefore, the software is not trained to the voice of a call assistant. *Id.* As such, Patent Owner initially raised in its Patent Owner Response the issue whether “trained to the voice of the call assistant” encompasses software designed in advance of implementation at the source code level. Therefore, we do not agree with Patent Owner that it did not have an opportunity to address this issue, which Patent Owner first raised itself.

Along these lines, Patent Owner also asserts in its Request for Rehearing that we overlooked an alleged admission at the Hearing by Petitioner that the claim language inherently includes a temporal constraint that precludes training when the software is designed in advance of implementation at the source code level. Req. 11 (citing Paper 64 (Hearing Transcript), 17:3–5). We are not persuaded that we did so. Rather, we

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considered Petitioner's statement at the Hearing in light of the evidence of record.

In our Final Decision, we determined that the Specification discloses that the voice recognition software package is trained but does not indicate when or how the training occurs. Final Dec. 8 (citing Ex. 1001, 2:51–54, 6:21–24). We rejected Patent Owner's argument, relying on its declarant, that software "designed" is not software that is "trained to recognize individual voices" because we found insufficient support for Patent Owner's contention. Final Dec. 8 (citing PO Resp. 21). As we explained in our Final Decision, Patent Owner's declarant testified that a person of ordinary skill in the art would not have understood "trained" software to include "designed" software because technology to train software to recognize individual voices did not exist in 1994 and was not used in telecommunications relay service at that time. Final Dec. 25 (citing PO Resp. 25–27; Ex. 2001 ¶¶ 19–20). We weighed this testimony, which relied on capabilities of technology available in 1994, and concluded this testimony had little probative value of the understanding of one of ordinary skill in the art at the time of invention because the year of invention was 2001. Final Dec. 25. According to the challenged patent, commercial voice recognition software that is specifically trained to the voice of a particular call assistant was made "recently available." Ex. 1001, 6:20–36. Thus, the understanding of one of ordinary skill as of 2001 was crucial given the shift in voice recognition technology after 1994, and Patent Owner's declarant's testimony was only reflective of the understanding prior to this shift.

Thus, we do not agree with Patent Owner that we erred by not considering Petitioner's purported "admission" made at the Hearing. Rather,

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we considered Petitioner’s statement in determining that Ryan’s description of benefits provided by voice recognition software that “is specifically designed to recognize the voice of particular relay agents” (Ex. 1005, 4:33–38) disclosed the trained software recited in claim 1 of the ’346 patent. *See* Final Dec. 23–29.

For the reasons given, we are not persuaded that we misapprehended claim construction law or that Patent Owner was not provided with an opportunity to address claim construction of “trained to the voice of the call assistant.”

### *Conclusion*

Having reviewed Petitioner’s Request, we are not persuaded we misapprehended or overlooked any matter.

### *Alleged Panel Composition Errors*

Patent Owner requests rehearing before an expanded panel and additionally asserts we exceeded our authority by issuing a Final Written Decision that did not include a judge that was on the panel of administrative patent judges who decided to institute the review. Req. 1–4. Panel composition for an *inter partes* review is specified in 35 U.S.C. § 6(c), which states “[e]ach . . . inter partes review shall be heard by at least 3 members of the Patent Trial and Appeal Board, who shall be designated by the Director.” The Director’s authority under 35 U.S.C. § 6 to designate panels has been delegated to the Chief Judge. *See* Patent Trial and Appeal Board Standard Operating Procedure 1 (Rev. 14) (May 8, 2015) (“PTAB SOP 1”).

As acknowledged by Patent Owner (Req. 2), the Final Decision was decided by three administrative patent judges, who are members of the

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Board. *See* 35 U.S.C. § 6(a) (indicating that administrative patent judges, along with various members of the United States Patent and Trademark Office, constitute the Patent Trial and Appeal Board). The three administrative patent judges were designated by the Chief Judge according to PTAB SOP 1, titled “Assignment of Judges to Merits Panels, Interlocutory Panels, and Expanded Panels.” The Board, therefore, complied with the statutory requirements for panel composition. Accordingly, we did not issue the Final Decision with less than a “full panel,” as Patent Owner contends.

Moreover, the Chief Judge has discretion to designate judges to decide *inter partes* reviews. *See* PTAB SOP 1 at 2 (§ II.D) (“In general, the Chief Judge will designate a judge or judges, as appropriate, for all matters for AIA reviews.”); *see also AOL Inc. v. Coho Licensing LLC*, Case IPR2014-00771, slip op. at 2 (PTAB Mar. 24, 2015) (Paper 12) (informative) (setting forth that the designation of panel members is within the sole authority of the Chief Judge, as delegated by the Director). Patent Owner’s Request, therefore, does not show the composition of the panel that issued the Final Decision was arbitrary, capricious, or an abuse of discretion by the Board.

Patent Owner suggests an expanded panel is warranted to decide the Request in view of the panel composition and various allegations that we misapprehended the law. Req. 1. For the reasons given, Patent Owner does not persuade us that we misapprehended the law or the panel of three judges was deficient. Further, the Board’s procedures provide examples of reasons for expanding a panel, none of which apply here. PTAB SOP 1 at 3 (§ III.A). For example, an expanded panel may be appropriate when

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“serious questions have been raised about the continuing viability of an apparently applicable precedential decision of the Board, or a panel of the Board renders a decision that conflicts with a precedential decision of the Board or an authoritative decision of the Board’s reviewing courts.” *Id.* Patent Owner’s Request does not show a conflict or other reason that weighs in favor of panel expansion. Even so, the panel informed the Chief Judge, who has authority to expand a panel, of Patent Owner’s request, and the Chief Judge declined to expand the panel. *See* PTAB SOP 1 at 4 (§ III.B). (“The Chief Judge will determine when an expanded panel is to be designated.”); *see also Apple Inc. v. Rensselaer Polytechnic Inst.*, Case IPR2014-00319, slip op. at 2 n.1 (PTAB Dec. 12, 2014) (Paper 20) (indicating only the Chief Judge, acting on behalf of the Director, may act to expand a panel and panels do not authorize panel expansion).

#### ORDER

It is hereby ORDERED that Petitioner’s Request for Rehearing is *denied*.

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PETITIONER:

Brian W. Oaks

Bryant C. Boren Jr.

Harper S. Batts

Adam F. Smoot

Joseph Gray

BAKER BOTTS L.L.P.

brian.oaks@bakerbotts.com

bryant.c.boren@bakerbotts.com

harper.batts@bakerbotts.com

adam.smoot@bakerbotts.com

joseph.gray@bakerbotts.com

PATENT OWNER:

Michael Jaskolski

Martha Snyder

Nikia L. Gray

Michael J. Curley

QUARLES & BRADY LLP

michael.jaskolski@quarles.com

martha.snyder@quarles.com

nikia.gray@quarles.com

Michael.curley@quarles.com





US006594346B2

(12) **United States Patent**  
**Engelke**

(10) **Patent No.:** **US 6,594,346 B2**  
(45) **Date of Patent:** **Jul. 15, 2003**

(54) **RELAY FOR PERSONAL INTERPRETER**

(75) Inventor: **Robert M. Engelke**, Madison, WI (US)

(73) Assignee: **Ultratec, Inc.**, Madison, WI (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/783,679**

(22) Filed: **Feb. 14, 2001**

(65) **Prior Publication Data**

US 2001/0004396 A1 Jun. 21, 2001

#### Related U.S. Application Data

(63) Continuation-in-part of application No. 09/288,420, filed on Apr. 8, 1999, which is a continuation of application No. 08/925,558, filed on Sep. 8, 1997, now Pat. No. 5,909,482.

(51) Int. Cl.<sup>7</sup> ..... **H04M 1/64; H04M 11/00**

(52) U.S. Cl. .... **379/52; 379/88.14; 379/93.09; 379/100.09; 379/100.13**

(58) Field of Search ..... **379/52, 88.13, 379/88.14, 93.09, 93.05, 93.15, 93.17, 93.18, 93.19, 100.09, 100.13; 704/235, 260, 270, 231, 258; 340/825.19**

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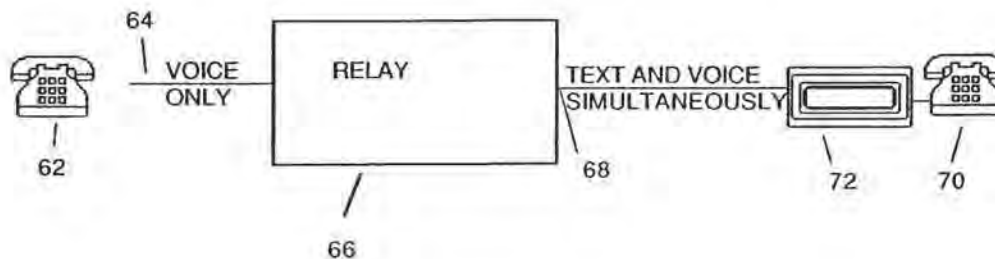
Primary Examiner—Allan Hoosain

(74) Attorney, Agent, or Firm—Quarles & Brady LLP

(57) **ABSTRACT**

A relay is described to facilitate communication through the telephone system between hearing users and users who need or desire assistance in understanding voice communications. To overcome the speed limitations inherent in typing, the call assistant at the relay does not type most words but, instead, re-voices the words spoken by the hearing user into a computer operating a voice recognition software package trained to the voice of that call assistant. The text stream created by the computer and the voice of the hearing user are both sent to the assisted user so that the assisted user can be supplied with a visual text stream to supplement the voice communications. A time delay in the transmission of the voice of the hearing user through the relay is of assistance to the assisted user in comprehending the communications session.

**2 Claims, 3 Drawing Sheets**



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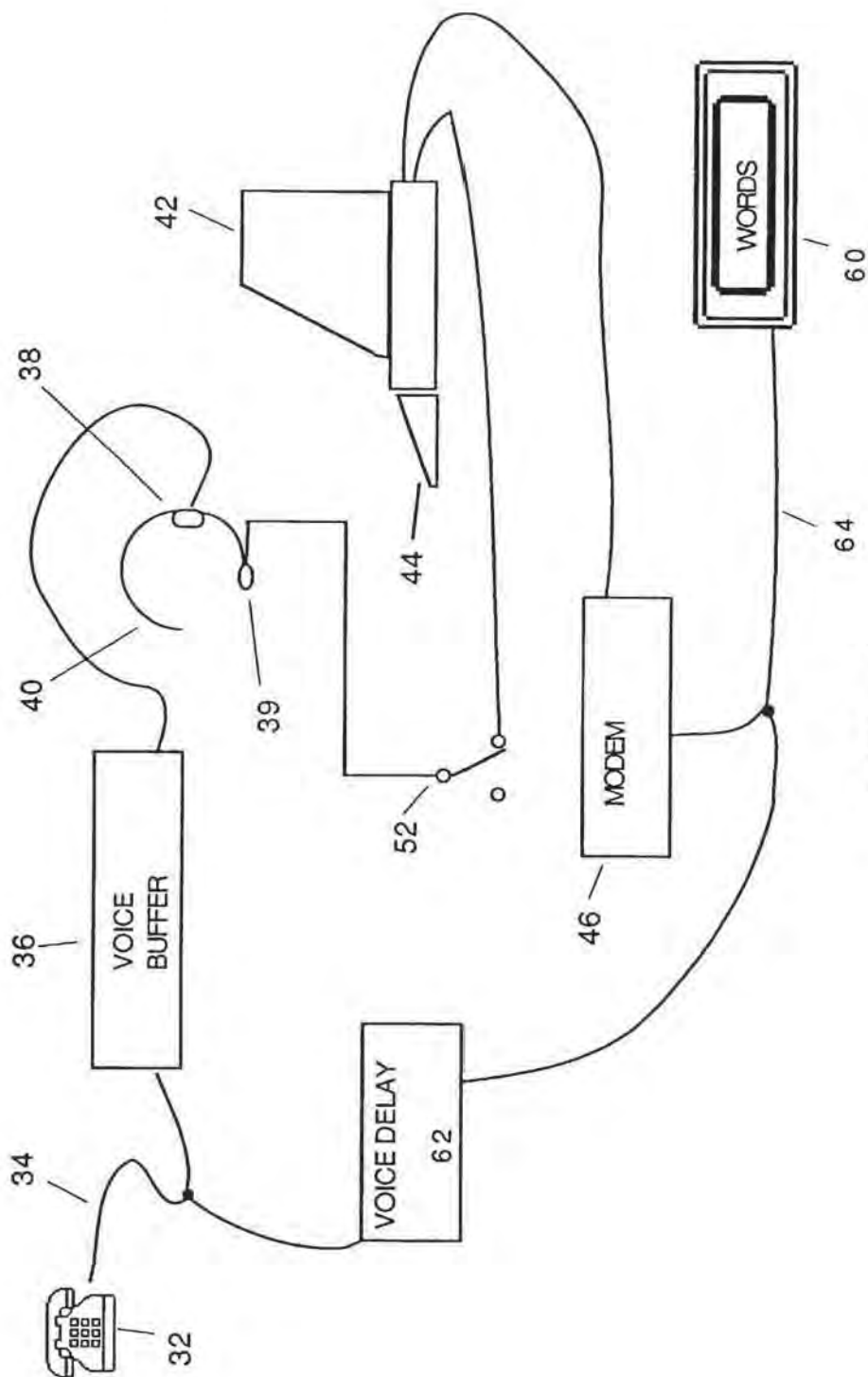


FIG. 1



FIG. 2

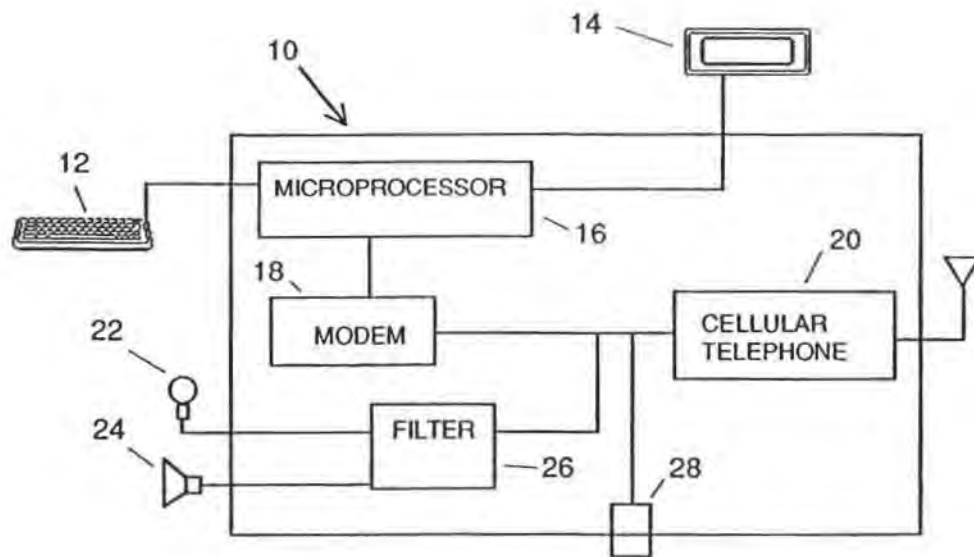


FIG. 3

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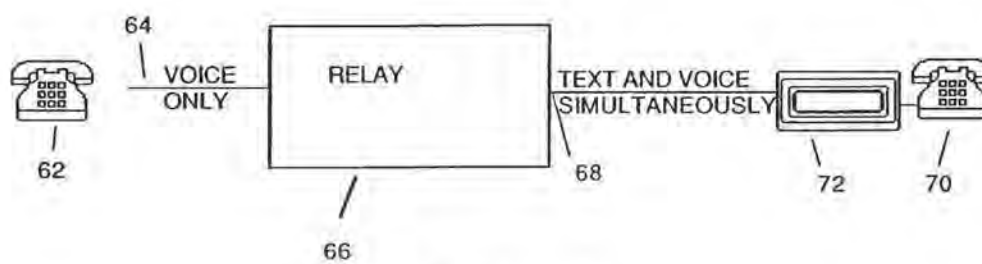


FIG. 4



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**RELAY FOR PERSONAL INTERPRETER****CROSS-REFERENCE TO RELATED APPLICATIONS**

This application is a continuation-in-part of application Ser. No. 09/288,420, filed Apr. 8, 1999, pending, which is a continuation of application Ser. No. 08/925,558 filed Sep. 8, 1997, now U.S. Pat. No. 5,909,482.

**STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT**

Not applicable.

**BACKGROUND OF THE INVENTION**

The present invention relates to the general field of telephone communications. In more particular, the invention relates to systems to assist telephone communications by those persons who are deaf, hard of hearing, or otherwise have impaired hearing capability.

Most modern human communications in both social and business environments takes place through sound communications. Yet within modern society there are many persons who have attenuated hearing capability. To assist those persons in making use of our telephonic communication system built for the hearing majority, there has been developed a system of telephone communication which has been principally used by the deaf community. That system makes use of a category of device known variously as a telecommunication device for the deaf (TDD), text telephone (TT) or teletype (TTY). Current TDDs are electronic devices consisting of a key board and a display as well as a specific type of modem, to acoustically or directly couple to the telephone line. Modern TDDs permit the user to type characters into their keyboard, with the character strings then encoded and transmitted over the telephone line to be displayed on the display of a communicating or remote TDD device.

Most TDD communication is conducted in an idiosyncratic code specific to the community of TDD users. This code, known as Baudot, evolved historically at a time when many telecommunication devices for the deaf were based on mechanical or electromechanical devices rather than the current technology based on digital electronic components. Accordingly, the Baudot protocol was constructed for a set of constraints which are no longer relevant to present date devices. The original Baudot protocol was a unidirectional or simplex system of communication conducted at 45.5 Baud. The conventional Baudot character set was a character set consisting of 5 bit characters and the system encodes the bits of those characters in a two-tonal system based on carrier tones of 1400 and 1800 Hertz.

The system of TDD communications is widely used and in fact has become indispensable to the deaf community throughout the industrialized world. Deaf persons extensively communicate with their neighbors and with other deaf and hearing people remotely, using the TDD system. In addition, systems have been developed to facilitate the exchange of communication between the deaf community and hearing users who do not have access to or utilize a TDD device. In the United States, telephone companies have set up a service referred to as a "relay." A relay, as the term is used herein, refers to a system of voice to TDD communication in which an operator, referred to as a "call assistant," serves as a human intermediary between a hearing user and a deaf person. Normally the call assistant wears a headset

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that communicates by voice with the hearing user and also has access to a TDD device which can communicate to the deaf user using a TDD appropriate protocol. In normal relay operations in the prior art, the call assistant types at a TDD keyboard the words which are voiced to her by the hearing user and then voices to the hearing user the words that the call assistant sees upon the display of his or her TDD. The call assistant serves, in essence, as an interpreting intermediary between the deaf person and the hearing person to translate from voice to digital electronic forms of communication.

A limitation in the effectiveness of current relay protocols is the necessity for the call assistant simply to type what is said. Typical call assistants can usually type reasonably well, typically in the range of 40 to 60 words per minute. While systems exist which permit the digital encoding of verbal communications at a faster rate, such as court stenography used in the legal system, such systems require extensive special training and are impractical for the numerous call assistants required by the relay systems in operation today. This limitation on the speed of conversion from speech to digital communications hampers the effective flow of communication in a relay call between the hearing person and a deaf person, since most hearing people speak at a rate which is higher than most call assistants can type. In addition, since conventional Baudot communications is unidirectional, the flow of conversation in a relay assisted communication session can be somewhat awkward. For example, first the hearing person must voice a statement or question. Then the calling assistant must type that statement or question, which is then transmitted at Baudot speeds, which are slower than normal human voice communication, to the deaf person. The deaf person waits until the entire statement or question is transmitted to him or her, after which he or she composes a response and types it in at his or her TDD. Then the communication flows backward to the call assistant who must voice to the hearing person what the deaf person has typed at his or her terminal. This process enables a degree of two-way communication between a deaf person and a hearing person, but the system tries the patience of the hearing person, since it is typically not conducted at a pace anywhere close to normal human communications.

**BRIEF SUMMARY OF THE INVENTION**

The present invention is summarized in that a relay system to facilitate the translation of information and communication between deaf and hearing persons includes a call assistant who re-voices the words of the hearing person which are spoken to the call assistant. The words spoken by the call assistant are recognized by a speech recognition computer program which has been trained to the voice pattern of the call assistant, such that the words are promptly translated into text and formatted into a high speed digital communication protocol. That high speed digital communication message is then transmitted electronically promptly by telephone to a visual display accessible to the deaf person.

It is an advantage of the invention described herein that the call assistant does not have to type most, if any, of the words spoken by the hearing person in the communication session so that the overall speed of communications from the hearing person to the deaf person is dramatically increased.

It is an object of the present invention that the design and utilization of a relay operated in accordance with the protocols described herein permits the introduction of small hand-held personal interpreter which will enable on the spot



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communications between deaf persons and hearing persons wherever the deaf persons might go.

Other objects, advantages and features of the present invention will become apparent from the following specification when taken in conjunction with the accompanying drawings.

#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

FIG. 1 is a schematic block diagram of a re-voicing relay.

FIG. 2 is an exterior view of a personal interpreter enabled by the relay of FIG. 1.

FIG. 3 is a schematic block diagram of the personal interpreter of FIG. 2.

FIG. 4 illustrates the operation of a captioned telephone service supported by a relay.

#### DETAILED DESCRIPTION OF THE INVENTION

The present invention involves developments in the improvement of computer assisted relay services. These developments are based upon using voice recognition software, operated by a call assistant (a "CA"), to assist in the voice to text translation inherent in providing relay services. The CA re-voices the words spoken by a hearing user, with the voice recognition software translating the voice into text, so that near to simultaneous voice and text of the voice can be delivered to an assisted user.

The re-voicing relay has its first implementation in providing voice to text transcription services for the deaf. However, the relay voice to text transcription service has use for users other than those who are deaf. It is envisioned that there are a number of hearing or partially hearing users who would have reason to benefit from voice to text transcription services. For example, a device known as a captioned telephone, described below, permits telephone users who have hearing difficulty in use of the telephone by providing a near-simultaneous text transcription of telephone conversations, the text being provided by a relay. Relay voice to text service might also be useful for any application in which it is desired to supplement voice communications by a text transcription of the voice spoken on the telephone. Thus, while the operation of the relay will sometimes be described here by referring to an "assisted user," who may be deaf or hard of hearing, but who also may be a normally hearing person who simply wants text assistance for some reason. The user at the other end of the line will be referred to here as the hearing user, simply for the purpose of having something to call that person, even though both users may be hearing.

##### Introduction to Re-voicing Relay

The computer-assisted relay system is intended to provide more conversation-like performance of voice to text interpreting for translating between an assisted user and a hearing user. The method of operating the relay described herein is applicable to the broad TDD community, and also to all the applications in which a relay might be normally used. However, since the advantages of this system are most clear in view of its usefulness in enabling the advent of the truly portable personal interpreter for the deaf, a diversion to discuss what this device is and how the relay may enable its practical use is appropriate here.

##### Personal Interpreter

Shown in FIG. 2 is an illustration of what a personal interpreter 10 can look like. This would be a small hand held

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device typically the size of a small hardbound book. It would have a keyboard of minimal size, but useable by a deaf person who can type. It would have a multi-line display, but the display could be any size that conveniently fits in the case of the device. The device would also have a key or switch which would initiate its operation.

Shown in FIG. 3 is a schematic block diagram of the internal mechanics of the personal interpreter. The personal interpreter keyboard shown at 12 and its display as shown at 14. Inside the interpreter itself is a microprocessor shown at 16. Not shown, but included within the personal interpreter, would be the appropriate memory and interface devices so as to allow the microprocessor to be programmed and to operate the personal interpreter and perform its functions, in a manner well known in the art. Also inside of the personal interpreter is a modem 18. The modem 18 is preferably a modem specifically designed for interface with the deaf telecommunications system. Most telecommunications with the deaf community are conducted using a Baudot type code.

It is preferred that the mode be designed to use the enhanced form of Baudot communication known as "Turbo Code" (Ultratec), which is generally described in U.S. Pat. Nos. 5,432,837, 5,517,548, and 5,327,479, the disclosure of which is hereby incorporated by reference. It is even more preferred that the modem use a new variant of Turbo Code, one which uses higher carrier frequencies (in the range of 3000-3500 hertz) and a faster baud rate (over 100 baud). The output of the modem is preferably wired to a cellular telephone 20 included within the case of the personal interpreter 10. The cellular telephone 20 has a suitable antenna provided on it so that it may dial a cellular telephone network by radio frequency communications of the type normally conducted by cellular telephones. The personal interpreter also includes jack 28 to connect to a conventional wired or land-line telephone line as well. The personal interpreter also include a microphone 22 and a speaker 24. A filter 26 connects the speaker 24 and the microphone 22 to the telephone 20.

A brief description of the operation and functionality of the personal interpreter reveals the dramatic improvement and convenience and portability that this device gives to deaf people. A deaf user could go into an establishment, be it a government office or retail facility, in which there are only hearing persons. The deaf person would carry with him or her the personal interpreter 10. The deaf person would then place the personal interpreter 10 upon a counter or other surface, open it up, and press the initiation key or start button. The microprocessor 16 and modem 18 of the personal interpreter then power up and act in many ways like a normal TDD device operating in telecommunication standard, such as Turbo code. However, there is one critical difference. The start or initiation key further causes the microprocessor 16 of the personal interpreter to dial a relay to set up a relay communication session and includes in its communication with the relay a message, using the enhanced command features available in advanced telecommunication protocols, such as Turbo Code, to initiate a special format of relay call adapted for the personal interpreter. Other codes which permit command functions, such as ASCII or CCITT, could also be used. The first operation is to activate the cellular telephone and direct the cellular telephone to dial the number of a relay operating in accordance with the method of the present invention. The cellular telephone dials the relay. Obviously, no wired connection is required to allow the cellular telephone function to establish a telephone connection with the remote relay, but alternatively the jack 28 to a conventional telephone line could be



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used. In addition, when the relay answers the telephone connection, the microprocessor 16 of the personal interpreter 10 is instructed to provide command codes to the remote relay. These command codes, a feature possible through the use of Turbo Code, permits the personal interpreter to tell the relay that this is a personal interpreter-type relay communication session. All of this can happen in the time necessary to initiate the cellular call, perhaps two to ten seconds.

Then, the deaf person can use the personal interpreter to translate words spoken by hearing persons in the presence of the personal interpreter into visually readable text. This is done by the personal interpreter 10 through an unseen relay. Words spoken by the hearing persons in the presence of the personal interpreter 10 are picked up by the microphone 22. Those words are then transmitted through the cellular telephone 20 to the remote relay. The relay, operating as will be described below, then immediately transmits back, in enhanced Turbo Code, a digital communication stream translating the words that were just spoken. The words are received by the modem 18, and the microprocessor 16 in the personal interpreter 10, and it is displayed promptly upon the display screen 14. If the deaf person can speak, he or she may then answer the hearing person with a spoken voice, or, the deaf person may alternatively type upon the keyboard 12. If the deaf user types on the keyboard 12, the personal interpreter transmits the communication by digital communication to the relay. The call assistant at the relay then reads and speaks the words typed by the deaf user which are transmitted to the speaker 24 contained in the personal interpreter into a voice communication which can be understood by the hearing users. The filter 26 filters out the digital communication frequencies from the sound generated by the speaker 24. Thus, in essence, the deaf person has a personal interpreter available to him or her at all times of the day or night wherever the deaf person is within the range of the cellular telephone system. Also, because the relay is preferably operating in accordance with the fast translation methodology described below, a very conversation-like feel can occur in the communication session between the deaf user and the hearing persons in the presence of the personal interpreter 10. In order for this communication session to be satisfactory to the hearing users as well as the deaf person, however, the relay must operate exceedingly rapidly. It is, in part, to meet the need for the exceeding rapidity of this conversational style of communication that the relay protocol of the present invention has been designed.

#### Re-voicing Relay

Shown in FIG. 1 is a relay intended to provide the voice to text capability to support the personal interpreter, and which can also support other voice to text services to provide services for assisted users. FIG. 1 is intended to show, in schematic fashion, how such a relay system can be set up. Shown at 32 is a telephone of a hearing person. Instead of a telephone of a hearing person, the input could also be the microphone of the personal interpreter 10 shown in FIGS. 2 and 3. The telephone of the hearing person 32 is connected through a telephone line 34 to a voice input buffer 36 at the relay. The telephone line 34 can be an actual physical land line, i.e. two pair between the telephones, or can be a cellular or other over-the-air telephone linkage or can be an internet protocol digital connection. The voice input buffer 36 is a simple buffer to ensure temporary capture of the voice in the event that the call assistant gets behind and needs to buffer or delay the voice of the hearing person. In any event, the output of the input voice buffer 36 is provided to a headset

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40 where earphones 38 produce the sound of the remote speaking person in the ear of the call assistant. The call assistant is wearing the headset 40 and sitting at a computer 42 capable of communicating in an enhanced Baudot communication, such as Turbo Code or whatever other code protocol is being used. However, typically the call assistant does not type the words which the call assistant hears in his or her earphone 38. Instead, the call assistant then speaks the words which he or she hears in the earphones 38 into a microphone 39 in the headset 40. The microphone 39 on the headset 40 is connected to transmit the voice of the call assistant to the computer 42 at which the call assistant sits.

The computer 42 has been provided with a voice recognition software package which can recognize the spoken voice of the call assistant and immediately translate words spoken in that voice into a digital text communication stream. It is a limitation of currently available speech recognition software that the software must be trained or adapted to a particular user, before it can accurately transcribe what words the user speaks. Accordingly, it is envisioned here that the call assistant operates at a computer terminal which contains a copy of a voice recognition software package which is specifically trained to the voice of that particular call assistant. It is also important that the voice recognition system be capable of transcribing the words of the voice of the call assistant at the speed of a normal human communication. It has been found that a recently available commercial voice recognition package from Dragon Systems, known as "Naturally Speaking," is a voice recognition software which will accomplish this objective and which will translate to digital text spoken words of a user at the normal speeds of human communication in conversation when operating on conventional modem personal computers. A voice recognition software system known as "Via Voice" from IBM provides similar functionality.

The computer terminal 42 of the call assistant then translates the text created by the voice recognition software to a modem 46 out through a telephone line 48 back to the display 50 located adjacent to the assisted person. The display 50 can be a conventional TDD located at the home of the remote assisted user, or can be the display 14 of the personal interpreter 10, or can be any other display or text capture device used by an assisted user.

For reasons that will become apparent, there is also a connection from the microphone 39 of the headset 40 of the call assistant to the incoming telephone line 34 through a switch 52. The switch 52 can physically be an electrical switch located between the microphone 39 and the telephone lines 34 and the computer 42 or, as an alternative, it can be a software switch operating in the computer 42 which passes the voice of the hearing user through to the telephone lines as voice, or not, under conditions which are selected by the call assistant, by choices he or she makes at the keyboard 44 of the computer 42. The switch 52 is functionally a single pole double throw switch although, of course, if this function is performed by the computer it will be a logical not a physical switch. In the simplest embodiment, the switch 52 is a simple single pole dual throw switch readily accessible to the call assistant which passes the voice of the call assistant from the microphone either out onto the telephone line 34 or to the computer 42.

It is a further enhancement to the operation of the relay constructed in accordance with the present invention that the earphones 38 have noise attenuating capability. Noise canceling earphones are commercially available today or, for this purpose, the computer 42 can be provided with noise



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canceling sound generation software which would create sound transmitted to the earphone 38 so as to cancel the sounds of the call assistant's own voice. The noise attenuation or cancellation avoids distracting the call assistant, since he or she would then be less distracted by the words that he or she has spoken, and thus would be less likely to be distracted from the concentration of the task of re-voicing the sounds of the voice heard in the call assistant's ear.

Similarly, another option which would be advantageous is that the software providing for the creation of the digital text string by voice recognition be buffered in its output flow to the modem 46. Before the computer 42 would pass the data on to the modem 46, the data would first be displayed on the computer screen of the computer 42 for review by the call assistant. The purpose of this option would be to permit the call assistant to use the keyboard to spell or correct hard-to-spell words, or to create corrections of any misinterpretations created by the voice recognition software, from the words spoken by the call assistant. It is anticipated that if such an option is utilized, it would require fairly infrequent use of the keyboard by the call assistant, since frequent use would clearly slow down the through-put of the communications.

The relay of FIG. 1 can operate with normal TDDs or with a personal interpreter as shown in FIGS. 2 and 3 and can also be used to support the operation of the captioned telephone described below. In either event, the hearing person speaks in the telephone 32 and the words are transmitted through the telephone line 34 to the voice buffer 36. The voice buffer 36, again operating under the control of the call assistant, would buffer the voice signals from the hearing user as needed for the call assistant to keep up. The call assistant would hear the voice of the hearing user through the earpiece 38 and then would re-voice those same words into the microphone 39. The words that the call assistant speaks into the microphone 39 would be fed to the computer 42 where the voice recognition software, trained to the voice of the call assistant, would translate those words into a digital text stream. The digital text stream would be turned into a digital communication stream by the modem 46 and passed on the telephone line 48 to a display 50 which can be observed by the assisted user. Experience has shown that using currently available technology the delay between the time the hearing user speaks into the telephone 32 and the time the words appear on the display 50 of the assisted user is a modest number of seconds.

In the reverse, when a non-speaking assisted user types onto his or her telecommunication device, the digital signals are transmitted to the computer 42 which displays them for the call assistant who then voices those words into the microphone 39 which words are then transmitted onto the telephone line 34. Note that the presence of the switch 52 is therefore important in this mode. Since the voice of the call assistant serves two different functions in the operation of this system, the signal on the call assistant's voice must be switched so that the hearing user 32 only hears the voice for the communications which are intended to be directed to that person. The switch 52 allows for the voice of the call assistant only to be directed to the hearing person at the appropriate times.

Note that if the relay of FIG. 1 is used to facilitate a translation based on a personal interpreter such as that shown in FIGS. 2 and 3, there will be only one telephone line between the personal interpreter and the call assistant. In essence, in a modification of FIG. 1, the telephone 32 and the display 50 would both be within the personal interpreter 10. There would be only one telephone line, a cellular link,

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between the personal interpreter 10 and the call assistant. This telephone line may be a virtual, as opposed to physical linkage between the parties, as for example a linkage using internet protocol over the internet. Note therefore that the voice of the call assistant and the digital communications created by the computer 42 would then travel on that same telephone linkage to and from the personal interpreter 10. It is therefore important for this embodiment that the personal interpreter 10 have appropriate filtering (i.e. the filter 26) to filter out the digital communication carrier frequencies of the digital communications protocol, so that they are not heard by hearing listeners in the presence of the personal interpreter 10. The telephone line must still carry voice signals, however, so that the spoken words articulated by the call assistant in response to digital instructions from the deaf user can be properly broadcast by the speaker contained within the personal interpreter.

The provision for filtering of the digital frequencies can be done in any number of ways with two being the principal preferred methodologies. If Turbo Code communications are conducted at the conventional Baudot frequencies of 1400 and 1800 Hertz, the personal interpreter 10 could be provided with notch filters 26 to filter out signals at those particular frequencies. It has been found that such notch filters still permit the transmission of audible and understandable human speech, even if they filter at those particular frequencies. As an alternative, it is possible to change the Baudot frequencies to those which are much higher, such as frequencies of 3000 to 3500 Hertz. If this alternative is selected, the personal interpreter 10 is then provided with a low pass filter which permits low frequency sounds to go to the speaker to be broadcast into the environment of the personal interpreter, while high frequencies are excluded.

It is also specifically envisioned that the filter of text communications signals from the voice signal can be done digitally or logically rather than by analog filter. For example, it is possible to implement the modem at site of the assisted user using a digital signal processing, or DSP, integrated circuit. Such a DSP chip can be programmed to recognize to separate voice signals from text communications signals and to pass along only the voice signals to the speaker at the location of the assisted user. It is also contemplated that the telephone linkage between the relay and the assisted user could be a digital connection rather than an analog telephone line. For example, the linkage between the relay and the assisted user could be a digital wireless linkage or an internet protocol linkage, wired or wireless. In either of these instances, the appropriate protocol calls for the transmission of packets of digital data, the packets being marked to indicate the type of information carried in the packets. The packets might contain, for example, voice signals which have been digitized or might contain simple digital information representing the text string of a conversation. In the instance of such a digital packet type communication protocol, the filtering out of the digital text information could be implemented simply by only converting the packets marked as voice back into sound. Packets marked as containing digital information would be used to recover the text information for display to the assisted user.

#### Captioned Telephone

Shown in FIG. 4 is an illustration of how a typical telephone call involving a captioned telephone would be set up. The hearing user at telephone 62 communicates through a telephone line 64 with the relay, indicated at 66. The relay, a re-voicing relay, communicates through a telephone line



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68 with the assisted user. At the site of the assisted user is a telephone 70 used by the assisted user and also a captioned telephone device 72. The telephone 70 is conventional. The captioned telephone device 72 is constructed to accomplish two objectives. One objective is to filter, or separate, the digital signals carrying the text information from the voice signal. The other objective is to take the digital signals and create a visual display of the text information for the assisted user. This device is thus intended to assist the user to understand a greater portion of the conversation by providing a visually readable transcription of the text of the telephone conversation so that the assisted user can read any words that he or she cannot hear properly.

While the utilization of the re-voicing relay is particularly intended to be helpful for the personal interpreter and captioned telephone applications, it is not intended to be limited to those particular applications. For example, the voice to text capability of the re-voicing relay makes the use of such a relay attractive for some business purposes, such as creating a text record of a business negotiation or interview session, conducted over or merely in the presence of a telephone. If the call assistant is a simultaneous translator from one spoken language to another, the relay can be used to conduct language translations assisted by text transcriptions. The voice delay relay can be used to present text nearly simultaneously to voice for such applications.

In the implementation of a relay providing captioned telephone service, the relay transmits both a digital text message stream and the voice of the hearing user over a telephone connection to the station of the assisted user. It is to be understood, however, that a conventional telephone single line connection is only one example of a telephonic connection that can be used in this arrangement. Digital wireless connection, or PCS connection, or even internet protocol wired or wireless connection can be used to connect the relay to the assisted user. The digital or analog nature of the telephonic connection is not critical, the only criticality being that the connection is capable of transmitting voice and text simultaneously from the call assistant to that user.

It is to be understood that the present invention is not limited to the particular illustrations and embodiments disclosed above, but embraces all such modified forms thereof as come within the scope of the following claims.

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1 claim:

1. A method of operating a relay system using a call assistant to facilitate communication between a hearing user and an assisted user by telephone, the hearing user speaking words in voice, the method comprising the steps of

transmitting the voice of the hearing user when speaking to the ear of the call assistant;

the call assistant speaking in voice the same words that the call assistant hears spoken by the hearing user into a microphone connected to a digital computer;

the digital computer using voice recognition computer software trained to the voice of the call assistant to translate the words of the voice spoken by the call assistant into a digital text message stream containing the words spoken by the call assistant;

transmitting both the digital text message stream and the voice of the hearing user by telephone connection to the assisted user;

displaying the digital text message stream to a captioned telephone display device within sight of the assisted person; and

transmitting the voice of the hearing user to the assisted user.

2. A relay to facilitate communications between an hearing user, speaking words in voice, and an assisted user, the relay operated by a call assistant, the relay comprising

a speaker connected to receive the voice from the hearing user and to transmit that voice to the ear of the call assistant so that the call assistant may voice those words;

a microphone connected to pick up the voice of the call assistant;

a digital computer connected to the microphone, the computer programmed to use a voice recognition computer software package to translate the words spoken by the call assistant into a digital text stream; and

a telephonic connection to transmit both the digital text stream and the voice of the hearing user over a telephonic connection to the assisted user.

\* \* \* \* \*

**United States Court of Appeals  
for the Federal Circuit**

*Ultratec, Inc.*

v.

*CaptionCall, LLC,*

Nos. 2016-1706, -1707, -1710, -1712

**CERTIFICATE OF SERVICE**

I certify that on September 30, 2016, a true and correct copy of the foregoing Brief of Appellant was served on all counsel of record via the Court's CM/ECF system. Upon acceptance by the Court of the e-filed brief, paper copies will be served on counsel of record within the time provided by the Court.

Dated: September 30, 2016

Respectfully submitted,

/s/ Anthony A. Tomaselli

Anthony A. Tomaselli

[anthony.tomaselli@quarles.com](mailto:anthony.tomaselli@quarles.com)

Kristin Graham Noel

[kristin.noel@quarles.com](mailto:kristin.noel@quarles.com)

Martha Jahn Snyder

[martha.snyder@quarles.com](mailto:martha.snyder@quarles.com)

QUARLES & BRADY LLP

33 East Main Street

Suite 900

Madison, WI 53703

Tel. (608) 251.5000

Fax (608) 251.9166

Michael J. Curley

[michael.curley@quarles.com](mailto:michael.curley@quarles.com)

QUARLES & BRADY LLP

One South Church Avenue

Suite 1700

Tucson, AZ 85701

Tel. (520) 770.8700

Fax (520) 623.2418

**CERTIFICATE OF COMPLIANCE**

1. This brief complies with the type-volume limitation of Federal Rule of Appellate Procedure 32(a)(7)(B) or Federal Rule of Appellate Procedure 28.1(e), as modified by the Court's Order on August 31, 2016 granting Ultratec's request for 20,000 words for its opening brief in this set of consolidated appeals (dkt. 63).

X The brief contains **19,863** words, excluding the parts of the brief exempted by Federal Rule of Appellate Procedure 32(a)(7)(B)(iii) and Fed. Cir. R. 32(b) (2011), but counting the words in the footnote in the Statement of Related Cases, or

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2. This brief complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) or Federal Rule of Appellate Procedure 28.1(e) and the type style requirements of Federal Rule of Appellate Procedure 32(a)(6).

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Dated: September 30, 2016

/s/ Anthony A. Tomaselli  
Anthony A. Tomaselli  
[anthony.tomaselli@quarles.com](mailto:anthony.tomaselli@quarles.com)  
Kristin Graham Noel  
[kristin.noel@quarles.com](mailto:kristin.noel@quarles.com)  
Martha Jahn Snyder  
[martha.snyder@quarles.com](mailto:martha.snyder@quarles.com)  
QUARLES & BRADY LLP  
33 East Main Street, Suite 900  
Madison, WI 53703  
Tel. (608) 251.5000  
Fax (608) 251.9166

Respectfully submitted,

Michael J. Curley  
[michael.curley@quarles.com](mailto:michael.curley@quarles.com)  
QUARLES & BRADY LLP  
One South Church Avenue  
Suite 1700  
Tucson, AZ 85701  
Tel. (520) 770.8700  
Fax (520) 623.2418

*Counsel for Appellant Ultratec, Inc.*